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HOOKER'S

JOURNAL OF BOTANY

AND

KEW GARDEN MISCELLANY.

EDITED BY

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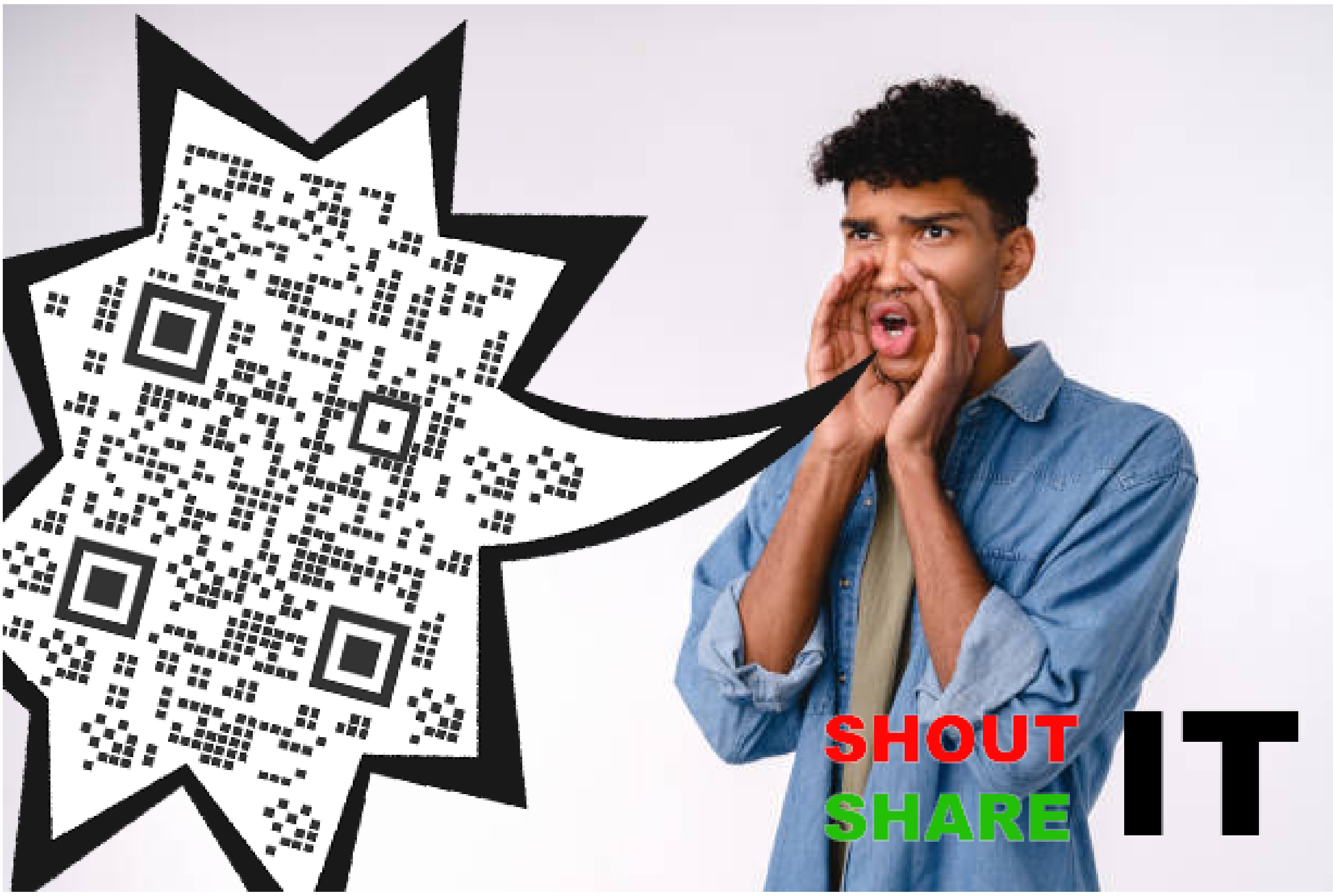
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AND

KEW GARDEN MISCELLANY.

On two new Plants, Epicarpurus Zeylanica *and* Doona Zeylanica, *found in Ceylon; by* G. H. W. Thwaites, Esq., *Director of the Botanic Garden of Peradenia.*

(Tab. XI. and XII. of Vol. III.)

Epicarpurus Zeylanica, *Thw.* (Tab. XI.)

Frutex ramosus, foliis subrhombeo-lanceolatis acuminatis glabris remote spinuloso-serratis, floribus masculis dense capitatis, capitulis oblongis, fœmineis racemosis, pedicellis apice incrassatis fructiferis valde elongatis.

A *shrub* or small *tree*, eight or ten feet high, sparingly spinose, much branched; the extremities of the young branches with a few short scattered hairs. *Bark* dark brown, somewhat rugose. *Leaves* smooth, flaccid, lanceolate or rhomboido-lanceolate, serrated, one and a half to two inches and three-quarters long, by three-quarters to one inch wide, tapering towards the slightly hairy very short petiole, with glandular puncta very minute and numerous. Male inflorescence pale yellow; anthers nearly round, with a green spot on the back; *bracts* small, inconspicuous. *Sepals* membranous, obtuse. Female inflorescence: *flowers* green, on rather long pedicels; *sepals* acute. *Stigmas* with brown villi on their inner face.

The male of the species just described bears a considerable resemblance to *Morus*, and might easily be mistaken for a member of that genus, but it will be seen that the structure of the female plant differs essentially from that of *Morus*.

The ovule in this plant, which at first merely causes a slight protuberance on one side of the ovary (as seen in fig. 3), during its development forces itself out of it, as it were, and at last occupies the summit of the flower (fig. 5), having pushed the upper part of the ovary with the stigmas on one side. It then has the appearance of a naked seed seated upon an enlarged receptacle.

The Peradenia Herbarium contains another species of the genus, allied to the above, but differing in its more rigid habit; the branches, which are of a pale ash-colour, all terminating in spines. The young male inflorescence differs too in being enclosed in rather large brown scaly bracts; and, in the only specimen of the female plant I have seen, the sepals are large and leaf-like, completely covering the fruit. (It is probably *Trophis spinosa*, Roxb.—Epicarpurus Timorensis, *Dcne.*) *Thwaites.*

We are indebted to Dr. Arnott for the following notes on the genus *Epicarpurus* and its allies:—

Blume, in his Bijdr., p. 488, has established the genus *Epicarpurus* for a plant he calls *E. orientalis*, and for which he cites Rheede, Hort. Mal., vol. i. t. 43; this last is universally allowed to be *Trophis aspera*. Blume, in the edition I possess, and the only one I ever heard of, gives us no information as to the relative size of the two cotyledons; but M. Decaisne, in his 'Herb. Timorensis Descriptio,' p. 171, says, "M. Blume indique, dans son *Bijdragen*, les cotylédons de son *Epicarpurus* comme étant inégaux." In the *E. Timorensis*, which Decaisne describes and figures in that memoir, the cotyledons are represented unequal, but he adds that in "*Trophis aspera*, Wall. L. n. 4640," the cotyledons are foliaceous and equal.

I do not know precisely what plant M. Decaisne had before him, but in all that I have examined under the name or similitude of *T. aspera*, the cotyledons are nearly as described by Roxburgh in his Flor. Ind. vol. iii. p. 761, and represented in a drawing in the E. I. C. Museum, tab. 118, viz., "cotyledons two, very unequal, the largest being nineteen-twentieths of the whole embryo, and one side divided *half-way through into two lobes*: the small cotyledon is hid between the lobes of the larger one." If M. Decaisne has, from its smallness, overlooked the one cotyledon, and mistaken the two lobes of the greater one for two equal cotyledons, the difference between his, Roxburgh's, and my observations will be accounted for. At all events, I consider that *T. aspera* (and so marked is that species that I have seen no other confounded with it) must be held as the type of *Epicarpurus* of Blume.

In his 'Bijdragen,' p. 507, Blume suggests that his *Urtica spinosa* is another species of *Epicarpurus*: Decaisne adds *E. Timorensis*, and says that *Albrandia* of Gaudichaud also belongs to it. Gaudichaud's character of *Albrandia*, in Freycinet's Voy. p. 709, is too imperfect to permit me either to affirm or deny this, and I have seen no specimens; but all the species with which I am acquainted, either by specimens or figures, are furnished with thorns and smooth leaves, except the original species (*Trophis aspera*): in all, except it, the ovary undergoes an unequal development, the side to which the ovule is attached enlarging more rapidly than the opposite one; so that the style, which at first is at the apparent as well as real apex of the ovary, appears at length lateral, and the ovule becomes more elevated than the base of the style.

The original and genuine species of *Epicarpurus* scarcely exhibits any tendency to this kind of resupination, and has no spines. To the spinous section I refer *Trophis spinosa*, Roxb. Fl. Ind. vol. iii. p. 762 (*T. taxiformis*, Hook. et Arn. in Bot. Beech. Voy. p. 215, or *T. taxoides*, Roxb. in E.I.C. Mus. tab. 120, and in Roth, Nov. Sp. p. 368), *Epicarpurus Timorensis*, Dcne., which scarcely differs as a species, unless characters not alluded to in the description and figure can be derived from the specimens, and a Ceylon species, from Mr. Thwaites, lately submitted to my inspection, in which the perianth of the female flower does not seem to enlarge with and at length conceal the fruit, in that respect resembling more the genuine *Epicarpurus*, while the foliage and fruit are those of the spurious groupe. All these have the female flowers solitary or nearly so, and the males in globular heads or very short nearly globular racemes; but if there be no mistake in Blume's work, his *Trophis spinosa* has the flowers spicate (at least his generic character indicates this), and his short description of *Urtica spinosa* seems to indicate the same structure.

Epicarpurus microphyllus, Raoul in Ann. Sc. Nat. ser. 3. vol. ii. p. 117, and Choix de Pl. Nouv. Zélande, p. 14. t. 8, has the male flowers in bracteated spikes or rather catkins, and the female as in *Epicarpurus* *orientalis*, but the embryo is described "cotyledonibus conduplicatis *æqualibus* plicatis foliaceis." Raoul adds, "Notre *Epicarpurus microphyllus* appartient bien au genre où je l'ai classé par forme de ses cotylédons : les *Trophis* ont les cotylédons charnus et très inégaux, tandis que dans la plante qui nous occupe ils sont chiffonnés et foliacés." Were the only difference between *Trophis* and *Epicarpurus* to consist in the proportion of the cotyledons, I fear that they must be again united : in *Epicarpurus* the cotyledons are often thick, but they are constantly folded and crumpled. Of the *Trophis Americana*,* which is the type of the genus *Trophis*, I have not examined the seed, nor does M. Trecul (Ann. Sc. Nat. ser. 3. vol. viii. p. 147) describe it ; but there are abundant marks of distinction in the spicate inflorescence and tubular perianth.

Trophis and *Epicarpurus* both belong to the *Moreæ* as characterized by Trecul, the stamens being inflexed during æstivation.

In Trecul's memoir alluded to, an error occurs as to *Trophis spinosa*, Roxb. This I have said is one of the thorny species of *Epicarpurus*, and almost identical with *E. Timorensis* of Decaisne, as every one must acknowledge who reads attentively Roxburgh's description (Flor. Ind. vol. iii. p. 762) ; but Trecul refers it (p. 123) to *Cudrania Javanensis*, a plant belonging to his *Artocarpeæ*, having the female flowers in dense capitula, arranged in umbels, and with a simple style. In this he has been, perhaps, misled by Blume, who, in his 'Bijdragen,' p. 489, appears to have described a species of *Cudrania* (probably *C. obovata*, Trec.) under the name of *Trophis spinosa*, Roxb. Indeed Roxburgh himself may have led others astray, the plant to which he gave the manuscript name of *Trophis spinosa* at an early period of his botanical career, and under which he deposited a drawing in the E. I. C. Museum (tab. 119), and which name was adopted by Willdenow, never having been published by him as such : in fact, his manuscript *T. spinosa*, and consequently the *T. spinosa* of Willd. Sp. Pl. vol. iv. p. 735, is the *Batis spinosa* of the 'Flora Indica' (vol. iii. p. 762) ; nor is *T. aculeata*, Roth, Sp. Nov. p. 368, at all distinct : this, although belonging to the *Moreæ*, has the habit of *Cudrania*, and is the *Plecospermum spinosum*,

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* *Trophis Ramon* from Mexico (Linnæa, vol. vi. p. 357) is scarcely distinct. The specific name, too, is unfortunate, being obviously the same as *Ramoon*, by which *T. Americana* is known in Jamaica. *Ramon* is a Spanish expression for small boughs or twigs, which, when broken off, are suitable as fodder for cattle, and it does not indicate the species of plant.

Trec. (l. c. p. 124). So far as I can ascertain, the *Cudrania Javanensis*, Trec., was unknown to Roxburgh, although I feel satisfied that the other species placed by Roxburgh in *Batis* (*B. fruticosa*) is referable to *Cudrania*.

M. Trecul states that the specimens received by M. Delessert, and at the Paris Museum, from Dr. Wallich, under No. 4641 of his list, belong to two different genera; M. Trecul adds, however, that these specimens were from Nepal. Now herein, I believe, is some error; for, although *Cudrania Javanensis* be found in Nepal, I have reason to suppose that *Plecospermum* is not, and consequently that there must have been some mixture of labels; indeed, from the rapidity with which Dr. Wallich distributed the large collection under his charge, he could not overlook every specimen, but was obliged to leave much to those friends who assisted him. As M. Trecul does not state the *letter* attached to the specimens, I have no means of checking the error, but shall here state in detail the result of my own examination of most of the suite of specimens reserved for the India House, and now belonging to the Linnean Society of London.

4641 A, Herb. Heyne, from the Peninsula, is *Plecospermum spinosum*, with some specimens accidentally mixed of *Pisonia aculeata*.*

B, from Nepal, appears to be *Cudrania Javanensis*, but the specimens are bad; this species, however, is to be seen in various herbaria from Nepal, collected by Dr. Wallich in 1822.

C, Rohilcund. (On this I have no notes.)

D, from the Hort. Bot. Calc., is *Cudrania Javanensis*, with one piece of *Plecospermum spinosum*. The former was introduced from Nepal into the garden by Dr. Wallich, and the latter from Coromandel by Dr. Roxburgh, in 1802; consequently both, being cultivated there, may have got mixed by those who dried them; but it rather appears to me that the specimens of *Plecospermum* belonged to the letter E, from which packet they had dropped out, and that they were not derived from the garden at all; at the same time I may state that in some herbaria specimens of *Plecospermum* only are to be found under the letter D: it is readily recognized by the paler, almost livid and obovate leaves.

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* In the Linnæan herbarium are two specimens, one marked by Linnæus *P. aculeata*, the other, with smaller leaves, is unnamed by him but marked by Sir J. E. Smith *P. mitis*, L. This last agrees with the specimen mixed with Wall. L. 4641 A, but not with Linnæus's description of *P. mitis*, of which, however, he had no specimen.

E, from the Peninsula (Herb. Wight), is *Plecospermum spinosum.*

F, from Taondong. On this I have no notes; but if my recollection be correct, both C and F are species of *Cudrania.*

I may here add that of Wallich's List,

No. 4642, or *Trophis Heyneana,* is *T. spinosa,* Roxb. Fl. Ind., or *T. taxoides,* Heyne and Roth, and is therefore a species of *Epicarpurus.*

4643 A, or *Batis fruticosa,* is *Batis fruticosa,* Roxb., but is a species of *Cudrania.*

B seems somewhat different.

Morus ? scandens, Wall. L. n. 4652, is the same as *M. Javanica,* Blume, Bijdr. p. 488, and *Trophis scandens,* Hook. et Arn. Bot. Beech. Voy. p. 214, and is a species of *Malaisia,* a genus of *Moreæ,* closely allied to *Trophis,* but perhaps sufficiently distinct by the number of stamens.

To sum up these remarks :—*Trophis spinosa,* Roxb. Fl. Ind. (and the only plant intended by him under this name in his published works), is an *Epicarpurus.* *T. spinosa,* Roxb. MSS., and of his earlier collections, as well as of Willdenow, or *Batis spinosa,* Roxb. Fl. Ind., is *Plecospermum spinosum* of Trecul, to which also *T. aculeata* of Roth must be referred, which is truly a Coromandel plant, and not from Nepal. *T. spinosa,* Wall., from Nepal, is *Cudrania Javanica*; to which genus *Batis fruticosa,* Roxb., and several species from the islands to the east of India, belong.

I have only to add that in the fifteenth volume of the Linnæa, Spanoghe, in his Catalogue of Timor plants, enumerates, at p. 335, "*Trophis spinosa,* Roxb.," and "*T. coccinea,* Zp. :" notwithstanding that he strangely refers these to the *Thymeleaceæ,* leaving doubts even as to their affinities, I am inclined to think that both are species of *Cudrania,* and probably both described by Trecul.

Tab. XI. of Vol. III. (to be transferred to this volume). Fig. 1. Portion of a female plant :—*nat. size.* 2. Flower of ditto. 3. Pistil. 4. Vertical section of ditto. 5. Fruit. 6. Section of ditto. 7. Embryo. 8. Transverse section of ditto :—*magnified.* 9. Portion of a male branch :—*nat. size.* 10. Unexpanded male flower. 11. Fully expanded ditto :—*magnified.*

DOONA ZEYLANICA, *Thw.* (Tab. XII.)

Nat. Ord. DIPTEROCARPEÆ.

CHAR. GEN.—DOONA, nobis.—*Arbor* ingens, resinifera, versus apicem ramosissima. *Folia* alterna, stipulata, vernatione conduplicata, nec plicata; *stipulis* binis deciduis. *Calyx* persistens, 5-partitus, in æstivatione contortus; *sepalis* duobus interioribus minimis, tribus exterioribus majoribus crescentibusque. *Corolla* 5-petala; *petalis* ad basin connatis. *Stamina* 16, bi-seriata; *filamentis* dilatatis ad medium connatis; *antheris* subquadratis introrsis, longitudinaliter dehiscentibus, singula claviculo dorsali instructa. *Ovarium* superum, 3-loculare, loculis 2-spermis; *ovulis* semianatropis pendentibus. *Stylus* simplex, curvatus. *Stigma* simplex. Inflorescentia *ad apices ramorum, paniculata*; paniculis *axillaribus terminalibusque.*

Doona *Zeylanica.*

A *tree*, sixty feet in height and upwards, with a single *trunk*, much branched towards the upper part. *Bark* rough and cracked. *Branches* terete, smooth. *Leaves* petiolated, flat, penniveined with very numerous intermediate reticulations, lanceolate, 2–2½ inches long and ¾ of an inch wide, dark green above, paler beneath, rounded at the base, tapering towards the apex into a rather long acumen with an abrupt point. *Petioles* ½ an inch in length, grooved along the upper surface. *Branches* of the panicles pale, jointed, with small brown deciduous *bracts. Calyx* pale green, tinged with red, the three enlarged leaves becoming of a deeper red colour. *Petals* pale rose-colour, darker at the tips. *Stamens* with white dilated *filaments*, which are united more than half-way up. *Anthers* yellow, with a dark red dorsal claviculus. *Ovary, style*, and *stigma* pale green.

This fine forest-tree is very abundant in some parts of the Central Province of Ceylon, especially on the crests of the hills; the timber is much esteemed for building purposes, and the resin which exudes in considerable quantity from any wounded part of the tree is sometimes used by the natives for burning in their houses, being first mixed with the husks of paddy. The resin is soluble in spirits of wine or turpentine, and makes an excellent varnish.

The tree is called by the Cinghalese "*Doon*," or *Doon-gaba*; anglicè, *Doon*, or *Doon-tree*; whence our generic name *Doona*. (The genus is nearly allied to *Hopea*.—ED.)

Tab. XII. of Vol. III. Fig. 1. Flower-bud. 2. Expanded flower. 3. Petal. 4. Stamens. 5. Stamens separated. 6. Pistil. 7. Transverse section of ovary. 8. Vertical section of ditto. 9. Ovule. 10. Fruit:—*all but fig.* 10 *magnified.*

Second Report on MR. SPRUCE'S *Collections of Dried Plants from* NORTH BRAZIL; *by* GEORGE BENTHAM, ESQ.

(*Continued from* vol. iii. p. 373.)

The *Hippocrateaceæ*, three species, are all, as far as I have been able to ascertain, hitherto undescribed, but in the confusion which prevails in the nomenclature of this small order, it is a matter of some difficulty to determine the generic names which should be given to them. One species, with two distinct adnate anther-cells, belongs to the group established by Dupetit-Thouars, and afterwards by Cambessèdes, under the name of *Calypso*. If this genus is correctly made to include all the species with two-celled adnate anthers, of many of which the fruit is unknown, and which vary much in inflorescence, in the point of insertion of the stamens on the disc, and even in the anther-cells themselves, either entirely distinct and parallel, or diverging and more or less confluent at the apex; it would then comprise not only the original *Salacia Chinensis*, Linn., and *Johnia*, Roxb., but also *Raddisia* of Leandro da Sacramento, and even *Tontelea*, Aubl., or *Tonsella*, Schreb., which Aublet distinctly describes as having two-celled anthers, although Cambessèdes, apparently from examination of specimens, refers it to the one-celled genus. If a better acquaintance with all the species should confirm the above view, the Linnæan name of *Salacia* must be adopted, as proposed by Wight and Arnott and now generally confirmed.

Our two other species (to one of which, misled by Cambessèdes, I had on the distributed labels given the name of *Salacia*) have, in common with many other South American species, the anthers of *Hippocratea*, transverse, with the two cells confluent into a single one, at any rate after opening; but judging from their inflorescence, they probably both belong to the genus distinguished from *Hippocratea* by the baccate fruit. To this genus Cambessèdes unfortunately misapplied the Linnæan name of *Salacia*. This error having been corrected by Wight and Arnott, Endlicher has taken up, on the authority of Cambessèdes, Aublet's name of *Tontelea*, but this course can hardly be justified until Aublet's character shall have been shown to be erroneous from the examination of authentic specimens. In the meantime, it would appear better to follow Martius in taking up the name of *Anthodon* (not *Anthodus*, as written, apparently by mistake, in Schultes' 'Systema'), proposed by Ruiz and Pavon for a Peruvian species, generally supposed to have baccate fruit. This fruit, however, has not been seen, either by Ruiz or Pavon, or by Kunth, who both have described in detail and figured the original species; and as a Guiana plant closely allied to it in foliage and inflorescence (n. 710 of Schomburgk's first collection) is certainly a *Hippocratea*, it is probable that Ruiz and Pavon's *Anthodon decussatus* must also be reduced to that genus. But even should this prove to be the case, the name of *Anthodon* becomes otherwise unoccupied and may be applied as proposed by Martius. Among the other synonyms enumerated by Endlicher, *Raddisia*, described as having two-celled anthers, would be transferred to *Salacia; Sicelium* has evidently found its way here from a clerical or typographical error of Poiret's writing *Tontelea* for *Tontanea; Anthodiscus* is another clerical error for *Anthodus* or *Anthodon. Clercia*, Vell., is the only one of the long list free from doubt, but at the same time it is the most recent, and only made known by a rude figure. A careful revision of the whole Order, and a determination of the real limits of the genera, is much wanted. The following are the three new species above mentioned:—

1. Salacia *dulcis*, sp. n.; foliis oblongis sublanceolatisve obtusis grosse pauciserratis, cymis petiolo paulo longioribus, petalis oblongis subintegris calyce triplo longioribus, staminibus intra discum insertis, ovulis geminis collateralibus, bacca depressa 4–6-sperma.—Affinis videtur *S. campestri* (*Calypso campestris*, Camb. in St. Hil. Fl. Bras. Mer. vol. ii. p. 110. t. 104), sed elatior, folia majora, sæpius 4–5-pollicaria, paniculæ breviores, potius cymoso-corymbosæ quam oblongæ, calyces breviores, petala angustiora et integriora. *Bacca* depresso-globosa, 1–1½ poll. diametro. *Semina* omnia v. rarius 4–5 tantum perfecta, pendula, subglobosa, testa lævi crustacea, cotyledo-

nibus in massam duram conferruminatis, radicula minuta mammæformi hilum superum spectante.

This species, from the Barra do Rio Negro, is a shrub of about seven feet in height, with very small yellowish flowers. The fruit is yellowish-glaucous, juicy, and sweet. The Indians are very fond of it, and call it *Uaiatumà*.

2. Anthodon *grandiflorus*, sp. n.; glaber, foliis crassis late oblongis acuminatis integerrimis basi rotundatis, floribus pro genere magnis axillaribus lateralibusque aggregatis, pedicellis flore longioribus, petalis late obovatis integerrimis.—*Frutex* alte scandens. *Folia* petiolata, pleraque semipedalia v. longiora, crasse coriacea, acumine brevi obtuso, costa prominente, venis arcuatis parum conspicuis. *Pedicelli* in axillis 4–6, per anthesin semipollicem longi. *Calyx* apertus, lobis vix lineam longis orbiculatis, exterioribus paulo minoribus. *Petala* lutea, basi fusca, obtusissima, 4 lin. longa, expansa, 2 exteriora paulo latiora et basi minus angustata. *Discus* fuscus, conicus, crassus. *Stamina* ad marginem disci inserta, filamentis lineam longis. *Antheræ* transversæ, reniformes, per anthesin confluentim uniloculares, juniores in loculos 2 obliquos subdivisi. *Ovarium* disco immersum, loculis 3 biseriatim quadriovulatis. *Stylus* nullus. *Ovarii apex* triangularis, medio stigmatosus.—Near Barra, along streams.

3. Anthodon? *laxiflorus*, sp. n.; glaberrimus, foliis oblongis breviter acuminatis integerrimis pauciserratisve, paniculis axillaribus sessilibus laxe dichotomis, segmentis calycinis latissimis, petalis calyce duplo longioribus orbiculatis integerrimis, ovarii loculis biovulatis.—*Frutex* scandens. *Folia* breviter petiolata, semipedalia et longiora, tenuiter coriacea, nitidula. *Paniculæ* bipollicares, a basi ramosæ, ramis gracilibus fere filiformibus paucifloris, pedicellis ultimis 3–6 lin. longis. *Flores* expansi vix 2 lin. diametro. *Filamenta* intra discum inserta, libera, petalis breviora. *Antheræ* juniores distincte biloculares sed transversæ loculis divaricatis, nec ut in *Salaciis* Americanis erectæ loculis parallelis, et loculi demum in unum confluunt. *Fructus* ignotus.

This climber, with small yellow flowers, was gathered near Obidos, and distributed under the name of *Salacia laxiflora*, and may in some measure be considered as intermediate between the two genera. It is probable that a better acquaintance with the Order may point out some modifications in the generic groupes, so as to make them more conformable to habit and inflorescence. In the meantime the present plant appears to come nearer in character to *Anthodon* than to *Salacia*.

The South American *Aquifoliaceæ* are very numerous, although but few are as yet described, nor has any successful attempt been made as yet to groupe them into genera and sections. The species of *Ilex* are generally much alike, and distinguished by differences of form, size, and consistence, which, although constant within certain limits, are yet very difficult to describe. The present collection contains two, both so distinct from any that I am acquainted with, that notwithstanding these drawbacks I venture here to characterize them.

1. Ilex *parviflora*; glaberrima, foliis longiuscule petiolatis oblongis ellipticisve obtusis v. obtuse acuminatis integerrimis coriaceis basi rotundato-subacutis, pedunculis fasciculatis cum cymis 5–9-floris petiolo brevioribus, floribus minimis tetrapetalis.—*Arbor* 25-pedalis, forma *Ilicis aquifolii*. *Folia* coriacea, nitidula, 2½–3½ poll. longa, 1½ poll. lata, petiolo 6–8 lin. longo. *Nodi floriferi* axillares, in ramulum haud evoluti. *Pedunculi* plurimi, interdum ultra 12, vix 3 lin. longi, apice cymulam v. umbellulam ferunt 5–9-floram, pedicellis lineam longis. *Flores* abortu submasculi. *Sepala* orbicularia. *Petala* latiuscula, semilineam longa, alba, separatim secedentia. *Stamina* petalis longiora et iis basi vix cohærentia. *Ovarium* pyramidato-globosum, carnosum, loculis 4 minimis minute uniovulatis v. cassis, stigmate sessili obsolete 4-lobo. *Flores* fertiles non vidi.—From the forest near Barra.

2. Ilex *petiolaris*, sp. n.; glaberrima, foliis longe petiolatis ovatis breviter acuminatis integerrimis coriaceis basi cuneatis, pedunculis fasciculatis brevissimis paucifloris, baccis globosis glomeratis.—*Arbor* irregulariter ramosissima. *Folia* pleraque 2 poll. longa, fere 1½ poll. lata, basi breviter acutata, petiolo 7–9 lin. longo. *Flores* non vidi. *Pedunculi* fructiferi alii monocarpi 2 lin. longi medio cicatrices ostendunt pedicellorum abortientium, alii ibidem in pedicellos 2–3 divisi. *Calyx* sub fructu persistens, minimus, 4-lobus. *Baccæ* 2 lin. diametro, coccineæ, 4-spermæ, in fasciculos densos petiolo multo breviores confertæ.—From the Capoeiras near Barra.

A variety of *Goupia glabra*, Aubl., with the leaves and young shoots occasionally, but not always, covered with appressed hairs, was gathered on the Igarapé d'Irurá, near Santarem. The Natural Order of this plant is as yet very uncertain. With the habit and petals of a *Byttneria*, it has been placed in the neighbourhood of *Celastraceæ*, on account of the position of the stamens, alternating with the petals, whilst the ovary again brings it nearer to *Byttnerieæ*. These specimens are in good flower and young fruit, but I have as yet seen none ripe enough to ascertain the structure of the seed; that of the flowers is as follows:—

Calyx persistens, profunde 5-fidus, laciniis breviter triangularibus æstivatione imbricatis. *Petala* 5, hypogyna, æstivatione valvata, apicibus linearibus introflexis. *Stamina* 5; *filamenta* in tubum (seu discum) hypogynum cupulæformem margine sinuatum connata; *antheræ* ad marginem cupulæ sessilia, cum petalis alternantia, connectivo crasso pilis paucis reflexis hispido, loculis subglobosis, apice discretis, ad basin connectivi lateraliter insertis, rima brevi dehiscentibus. *Ovarium* sessile, depresso-globosum, stylis 5 brevibus stellatim divaricatis coronatum, 5-loculare; *ovula* in quoque loculo plurima, e basi axeos centralis erecta v. horizontalia, anatropa. *Bacca* parva, globosa, abortu 2–3-locularis, oligosperma. *Semina* erecta, ovoidea, in specimine adhuc immatura.

The only *Rhamnea* is the following species of *Gouania* from Barra, which does not agree with any published description, short and unsatisfactory as the characters of most of the described species are. The ripe fruit is known but of very few species of the genus, but, as far as known, seems to indicate its division into two groupes, one with the fruit more or less 3-winged, the other with a globose pyriform fruit scarcely even angled. The present species belongs to the former: one set of specimens from a climber covering the top of a large tree, with what appeared to be clusters of purple blossoms, proved, when Mr. Spruce had cut down the tree to obtain them, to be in ripe fruit only, with broad thick wings; a few specimens from another plant, evidently the same species, have younger fruit, scarcely winged at all, or with narrow and very thick wings, although the seeds are fully formed and nearly ripe. The degree of development of the wing is probably, therefore, in this genus as in *Dodonæa*, a character of very secondary importance and liable to vary in the same species.

Gouania *discolor*, sp. n.; foliis ovatis obtusis glanduloso-pauciserratis basi subcordatis supra glabriusculis nitidis subtus albidis minute tomentellis, capsulis trialatis.—*Frutex* alte scandens, caule angulato.

Ramuli subteretes, minute tomentelli; laterales in cirrhos simplices sæpe abeuntes. *Stipulæ* parvæ, caducæ. *Petioli* ½–1-pollicares. *Folia* 3–4-pollicaria, serraturis remotis obtusis, subcoriacea, supra viridia et glabra v. pilis raris conspersa, subtus tomento minuto albida et ad venas pilosula, penninervia et transverse venulosa, venis supra immersis subtus prominulis, primariis ad marginem folii glandula sessili terminatis. Cirrhi pauci ramulos foliatos v. rarius racemos terminant. *Racemi* axillares, simplices v. subramosi, superiores subpaniculati. *Flores* non vidi. *Pedicelli* fructiferi fasciculati, 1–2 lin. longi. *Capsulæ* tomentellæ, maturæ axi 3–4 lin. longo, alis latiusculis ante dehiscentiam crassis, carpella singula cum ala margine fere membranacea 6 lin. lata. *Semen* omnino ut in char. gen. Endlicheri. In altero specimine capsulæ juniores vix obtusissime alatæ.

Among nine *Terebinthaceæ* (two *Anacardieæ* and seven *Bursereæ*), three only are referable to published species, the *Trattinickia rhoifolia*, Willd. (with a trifid calyx, trifid corolla, and six, not five, stamens), from Barra, and two, or perhaps three *Icicæ*, from Santarem, closely allied to numerous specimens from Guiana and Brazil, which constitute, most probably, the *I. Guianensis*, Aubl., and *I. heterophylla*, DC., but which it is difficult to identify with certainty, without comparison with authentic specimens. The following are the new species :—

1. Cyrtospermum *gummiferum*, gen. nov.—*Char. gen.* CYRTOSPERMUM. *Calyx* parvus, 5-partitus. *Corolla* . . . *Stamina* 10, sub disco hypogyno inserta. *Ovarium* . . . *Drupa* ovoidea, erecta, acutiuscula, pericarpio tenui. *Endocarpium* osseum, dissepimento duro curvato separatum in loculos 2, altero parvo laterali vacuo, altero hunc fere circumdante, sectione transversa hippocrepico. *Semen* unicum, loculo conforme et pariter curvatum, ex apice pendulum; *testa* tenuis; *albumen* nullum; *radicula* brevis, supera; *cotyledones* latæ, carnosulæ, dissepimento incumbentes.—Species unica *C. gummiferum*.—*Arbor* 40-pedalis, ramulis crassis. *Folia* simplicia (fere *Semecarpi*), ad apices ramorum approximata, semipedalia v. paulo longiora, rarius fere pedalia, cuneato-oblonga, obtusissima v. retusa, basi angustata et in petiolum brevem decurrentia, rigidula, glabra, parallele penninervia et tenuiter reticulato-venosa. *Paniculæ* axillares, parum ramosæ, 3–4-pollicares. *Flores* ex reliquiis suppetentibus parvi videntur, fasciculati. *Drupæ* semipollicares, purpurascentes.

These specimens remind one of some of the Asiatic *Semecarpi*, and, although not in flower, cannot be referred to any published genus, on account of the curious form of the seed. The fruit had probably its origin in a compound ovary with one fertile and several empty cells, which, with the habit, induce me to place the plant among *Anacardieæ*. It formed a straight tree of forty feet or more, with a trunk of about a foot in thickness, in the forest near Barra, distilling a reddish gum.

2. Mauria? (Tapirioides) *multiflora*, Mart. Herb. Fl. Bras. n. 1274 (nomen absque descr.); abortu dioica, ramulis petiolis paniculisque minute ferrugineo-tomentellis, foliolis 5–11 oblongis obtuse acuminatis basi obliquis glabris, paniculis masculis ramosissimis floribundis minutifloris, fœmineis oblongis paucifloris, stylis 4–5 brevissimis distinctis.—*Arbor* ramosissima, 18–20-pedalis. *Folia* sæpe pedalia; *foliola* opposita, breviter petiolulata, maxima 5 poll. longa, sæpius 3 poll. v. paulo minora, acumine longiusculo obtuso, supra glaberrima nitidula, subtus pallida v. ferruginea, glabra v. ad venas pilis minutis puberula. *Paniculæ masculæ* semipedales et longiores. *Bracteæ* minutæ, squamæformes. *Flores* secus ramos ultimos fasciculato-cymulosi, breviter pedicellati, expansi vix linea latiores. *Calyx* apertus, laciniis 5 orbiculatis obtusis. *Petala* ovata, calyce duplo longiora, demum reflexa, æstivatione leviter imbricata. *Stamina* 10, petala superantia, sub disco integro inserta, alterna breviora. *Ovarii* rudimentum hirsutum, disco impositum, in stylos breves 4–5 divisum. *Paniculæ fœmineæ* multo breviores et minus ramosæ. *Flores* paulo majores. *Calyx*, petala et stamina marium, hæc tamen tenuiora antheris effetis. *Ovarium* glabrum, ovoideum, carnosum, obtusum, coronatum, stylis 4–5 brevissimis crasse capitato-stigmatosis; intus uniloculare. *Ovulum* unicum e funiculo parieti cavitatis adnato suspensum. *Drupa* ovoidea, fere 6 lin. longa, obtusa, stylorum vestigiis vix umbilicata, nigra, pericarpio pulposo dulci, endocarpio crustaceo. *Semen* pendulum, fructu conforme; *testa* tenuis; *cotyledones* crasso-carnosæ, plano-convexæ, apice (quoad fructum infera) in acumen radiculæforme accumbenti-inflexum productæ. *Radicula* supera brevissima.

This tree, found by Mr. Spruce equally abundantly in wet and dry situations on the Amazon, appears to be very common in various parts of Guiana and Brazil, and can hardly have escaped the notice of earlier botanists; yet I am unable to identify it with certainty with any but Martius's plant, distributed in the 'Herbarium Floræ Brasiliensis,' under the number 1274, but named only in his Catalogue without any description. It agrees precisely with Aublet's principal figure of his *Tapiriria* (or *Tapiria*) *Guianensis*, and is very much like the apparently male specimen of that plant preserved in the British Museum; but Aublet's description and figure of the ovary and fruit (which I have no means of verifying) are at total variance with our plant. It is, however, very probably Kunth's *Comocladia*? *Tapaculo*, but certainly, as suspected by Kunth, does not belong to that genus. From *Mauria*, to which Martius refers it, it differs in the æstivation of the corolla, which is slightly imbricate, not strictly valvate, and in some respects in the style. The embryo is also different from that of *Mauria simplicifolia* (the only one of which I have seen ripe fruit), yet we can hardly venture to establish it as a distinct genus, unless both sexes as well as the fruit of the several other published *Mauriæ*, especially the small-flowered species described by Tulasne, shall, on comparison with the present species and some others allied to it, confirm these distinctions. In the mean time we may consider it as a section of *Mauria*, under the name of *Tapirioides*, which, if it be proved that Aublet had by mistake described the fruit of some different plant, may be exchanged for his name of *Tapiria*.

Mr. Spruce's specimens were first distributed to a few subscribers under the name of *Tapiria*, sp. n.? from Caripi, and afterwards more generally from Santarem, under the name of *Mauria multiflora*, Mart. I have also examined from other collections male specimens—from Guiana, Sir Robt. Schomburgk, 1st coll. n. 174, 2nd coll. n. 721, 789, 793, 915 and 916 (Rich. Schomburgk, n. 1052, 1350, 1406, 1483, 1482); from Surinam, Hostmann, n. 368 and 853; from Brazil, Martius, Sello, Salzmann, and Spruce; female specimens from Guiana, Sir Robt. Schomburgk, n. 1010 (Rich. Schomburgk, n. 1706), and from Brazil, Spruce; the fruit I have only seen in Spruce's specimens. To the same section appear to belong the two following species, of which, however, I have only seen male specimens:—*Mauria* (Tapirioides) *subbijuga*, Mart. Herb. Fl. Bras. n. 1275; foliolis brevissime petiolulatis 3–5 v. inferioribus solitariis oblongo-ellipticis obtuse acuminatis basi angustatis glaberrimis nitidis, paniculis masculis ramosissimis floribundis minutifloris.—*Petioli* communes 1–2-pollicares. *Foliola* 3–5 poll. longa, subcoriacea. *Panicula* mascula *M. multifloræ*. *Petala* calycis laciniis ovatis duplo longiora.—Minas Geraes (Claussen);—and

Mauria (Tapirioides) *obtusa*; foliis amplis, foliolis 7–9 obovato-ellipticis obtusis supra præter costam glabris, subtus petiolis inflorescentiaque ferrugineo-pubescentibus, panicula mascula ampla ramosissima floribunda minutiflora.—*Folia* sesquipedalia, abortu folioli terminalis sæpe abrupte pinnata. *Foliola* opposita, 3–6-pollicaria. *Paniculæ* quam in *M. multiflora* ampliores, floribus crebrioribus. *Pedicelli* brevissimi. *Petala* calycis laciniis orbiculatis triplo longiora.—British Guiana; Sir Robt. Schomburgk, n. 892 (Rich. Schomb. n. 1442).

3. Icica *Spruceana*, sp. n.; ramulis glabris, foliolis 7–9 oblongis longe cuspidatis integerrimis impunctatis, costa subtus petiolisque puberulis, paniculis brevibus a basi ramosis, fructu oblique ovoideo-triquetro 1–2-pyreno.—*Arbor* 30–40-pedalis, *I. heptaphyllæ* ut videtur affinis, pube petiolorum et costarum facile distincta. *Folia* ampla, foliolis petiolulatis 4–5-pollicaribus basi sæpe obliquis. *Flores* non vidi. *Paniculæ* fructiferæ vix pollicares, a basi ramosæ. *Drupæ* 8–9 lin. longæ, rubræ vel albæ (Spruce). *Pericarpium* tenue, durum. *Pyrenæ* sæpius 2. *Semen* paulo infra apicem affixum, maturum haud inveni, sed in embryone juniore cotyledones vix plicatæ erant.—From the forest near Barra.

4. Icica *pubescens*, sp. n.; ramulis novellis petiolisque pubescentibus, foliolis 1–3 ovali-oblongis cuspidatis paucidentatis glabris puberulisve minute pellucido-punctatis, floribus 4-nerviis 8-andris, stylo ovario longiore.—*Arbor* parva. *Folia* alterna v. hinc inde opposita, valde irregularia, pleraque pinnatim trifoliolata, impari a lateralibus oppositis distante nunc iis multo majore, nunc rarius æquali; alia simplicia, petiolo brevissimo fulto; maxima semipedalia v. paulo majora, pleraque multo minora; omnia rigide membranacea, penninervia, supra medium plus minus obtuse serrata, apice abrupte cuspidata, acumine obtuso angusto. *Petioluli* villosi, apice intumescentes. *Florum* fasciculi densi, axillares v. supra-axillares. *Pedicelli* lineam longi. *Calyx* parvus, lobis 4 orbiculatis. *Petala* lanceolata, 1¼ lin. longa, erecta, apice breviter patentia, acumine inflexo, æstivatione valvata. *Stamina* petalis dimidio breviora, antheris anguste oblongis. *Ovarium* disco orbiculato insidens, stylo petalis paulo breviore, loculis 4 biovulatis. *Drupa* carnosula, coccinea, nunc late ovata acuta bisulca basi subcordata disperma, nunc oblique ovoidea acuta monosperma. *Pyrenæ* crustaceæ. *Semen* pendulum, testa membranacea. *Embryo* exalbuminosus, radicula

supera, cotyledonibus subfoliaceis crassiusculis plus minus plicatis.—From sandy soils in the forest near Barra, differing considerably in habit from other *Icicæ.*

5. Hedwigia *rhoifolia*, sp. n.; foliolis 9–13 oblique ovali-ellipticis acuminatis pauciserratis rigide membranaceis ad costam petiolis inflorescentiaque puberulis, paniculis axillaribus brevibus, drupis tomentosis 1–2-pyrenis.—*Arbor* 25-pedalis, resinoso-aromatica. *Pubes* ramulorum petiolorum et inflorescentiæ rufescens. *Folia* majora sesquipedalia, foliolis ultimis interdum semipedalibus; *foliola* inferiora minora, opposita, penninervia et reticulato-venosa. *Paniculæ* in axillis superioribus 4–5-pollicares. *Flores* non vidi, sed reliquiæ ad basin fructus calycem indicant parvum 5-lobum. *Stamina* 10, sub disco orbiculari inserta. *Drupæ* 6–8 lin. longæ, tomento ferrugineo vestitæ, nunc late ovoideo-globosæ acutiusculæ dipyrenæ, nunc oblique ovoideæ dorso convexæ, hinc obtusangulæ, apice acutiusculæ, monopyrenæ. *Pyrenæ* osseæ, pulpa alba obtectæ. *Semen* pendulum, obovoideum, rectum, testa membranacea. *Cotyledones* crasso-carnosæ, plano-convexæ, rectæ, apice (infera) productæ in acumen breve radiculæforme tenue incurvum, in dorsum alterius cotyledonis incumbens (nec ut in *Mauria multiflora* accumbens). *Radicula* vera brevis, supera, intra emarginaturam cotyledonum inclusa.—From the vicinity of Barra.

6. Thyrsodium *Spruceanum*, gen. nov.—*Char. gen.* THYRSODIUM (Salzm. MS.). *Flores* abortu dioici (v. polygami?). FL. MASC. *Calyx* campanulatus, semi-5-fidus, laciniis acutis, æstivatione valvatis. *Petala* 5, laciniis calycinis alternantia, ad apicem tubi inserta, æstivatione valvata. *Stamina* 5, petalis alterna et cum iis inserta, brevia, antheris medifixis introrsis bilocularibus loculis parallelis longitudinaliter dehiscentibus. *Ovarii* rudimentum cum stylo continuum, lineare, corolla paulo brevius, apice in stigma bilobum dilatatum. *Fl. fœm.* et *fructus* ignoti.—Arbores *austro-Americanæ.* Folia *alterna, impari-pinnata, foliolis suboppositis.* Paniculæ *masculæ terminales, amplæ, floribundæ.* Bracteæ *parvæ, lanceolatæ, squamæformes.* Flores *in ordine majusculi, fere* Garugæ.

Of this genus, closely allied to the East Indian *Garuga*, I have the three following species:—

1. T. *Spruceanum*; panicula mascula laxa petiolisque minute tomentellis, foliolis 11–13 oblongis acuminatis supra nitidis reticulatis

subtus vix sub lente tomentellis, basi acutis, pedicellis bracteas superantibus calycem subæquantibus. — *Arbor* 16-pedalis. *Folia* 1–1½-pedalia. *Foliola* pleraque opposita, 3–6 poll. longa, 1–1½ poll. lata, abrupte et acutiuscule acuminata, basi acuta et breviter petiolulata, penninervia et reticulato-venulosa, venis primariis subtus prominulis et minute tomentellis, rete venularum utrinque conspicuo. *Panicula* anguste pyramidata, foliis subbrevior, bis terve ramosa, floribus secus ramulos ultimos racemulosis. *Bracteæ* lanceolatæ, acutæ, deciduæ, majores linea paulo longiores; ultimæ lineares, minimæ. *Pedicelli* 1–2 lin. longi, uti calyces et petala extus tomentelli. *Calycis* tubus lineam longus, laciniæ tubo æquilongæ. *Petala* paulo longiora, lanceolata, acumine inflexo. *Stamina* petalis dimidio breviora. — From the campos near Santarem. Flowers yellowish-green, honey-scented. (R. Spruce.)

2. T. *Salzmannianum*; panicula mascula thyrsoidea fasciculiflora petiolisque ferrugineo-tomentosis, foliolis (11–13) late oblongis breviter acuminatis coriaceis supra nitidis reticulatis subtus vix tomentellis basi obtusis, pedicellis bracteas vix æquantibus calyce brevioribus.— *Foliola* quam in *T. Spruceano* latiora, rigidiora. *Flores* secus ramos breves paniculæ dense glomerati.—Ad Bahiam in collibus. (Salzmann.)

3. T. *Schomburgkianum*; panicula mascula ampla ramosissima petiolisque ferrugineo-tomentellis, foliolis (11–13) amplis elliptico-oblongis acuminatis supra ad costam subtusque ferrugineo-pubescentibus, pedicellis bracteam vix æquantibus calyce brevioribus.—*Folia* bipedalia. *Foliola* 6–8 poll. longa, 2–3 poll. lata, vix coriacea, supra scabriuscula, subtus undique pubescentia. *Panicula* bipedalis. *Flores* in ramulos ultimos fasciculati, quam in præcedentibus paulo minores. —British Guiana; Sir Robt. Schomburgk, 1st coll. n. 892.

(*To be continued.*)

Abstract of a Journal kept during the voyage of H.M.S. Herald; *by* BERTHOLD SEEMANN.

On the 30th of October, 1850, the Herald fairly commenced her homeward voyage by bidding adieu to the Hawaiian Islands, and shaping her course towards China. Wafted along by the north-west trade-wind, she arrived, on the 19th of November, in sight of the island of Assumption, passed Formosa and the Bashee groupe, and, after experiencing in the neighbourhood of the latter a series of severe gales from the N.N.W., reached, on the last of November (or rather on the 1st of December, for she had lost a day), the harbour of Victoria, Hong-Kong.

The island of Hong-Kong, as seen from the anchorage, appears, especially during the winter, the time of our visit, a barren and uninviting country. Huge masses of trap, granite, and hornblende are piled upon each other, till they reach their highest summit in Victoria, a peak nearly 2,000 feet above the sea. But however unfavourable may be the aspect, on a closer inspection the botanist discovers a rich flora, full of new genera and species, although the labours of Hinds, Fortune, Hance, and Champion have already brought forward such treasures. Indeed, it is estimated that Hong-Kong, small as it is, produces about a thousand species, and probably many more: an estimate which I am by no means inclined to call into question; for nearly every nook and valley has its peculiar vegetation, and on the whole but few plants, which may be called common, are to be found. True, *Pinus Chinensis, Myrtus tomentosa, Callicarpa tomentosa,* and a species of *Pandanus* are frequent, but only in the lower parts; at an elevation of 400 feet they disappear, and are replaced by rarer productions.

I ascended Mount Victoria and the other peaks, explored various valleys, and went once to Cowloon, on the mainland, in the Chinese territory. At Cowloon a great portion of the vegetables—Sweet Potatoes, Cabbages, Onions, Spinach, Turneps, Egg-apples—consumed in Victoria, are grown; I also observed several acres planted with *Bœhmeria nivea,* for making grass-cloth. Botanical novelties I did not obtain, but found *Panax aculeatus,* a species of *Ficus,* two Ferns, and several almost dried-up specimens of *Clerodendron fragrans,* which grew abundantly on the road-sides, and were about four feet high. It is now universally regretted that the little peninsula of Cowloon was not selected for the British settlement, in preference to the unhealthy locality in which the present town of Victoria is built; for after all the enormous expenses to which the Government has been subjected in order to carry out the great public works, drainage, canals, bridges, &c., the salubrity of Hong-Kong is but slightly improved, and the annual mortality among the whites continues to be very great.

On the slopes of the hills forming the Happy Valley, just above the burial-ground, a number of rare plants are to be found. I gathered several species of Oak, the *Synædrys ossea*, Lindl., the nuts of which are eaten, a beautiful Chestnut (*Castanea*, sp.), *Memecylon nigrescens*, H. et Arn., *Camellia euryoides*, and *C. Japonica*. The latter was about twenty-four feet high, but this is by no means its greatest size: in some parts of the island it attains a height of fifty feet, and a stem more than a foot in diameter. To discover new species is highly gratifying, yet I think it is equally so to meet again with plants which, like the *Camellia Japonica*, were favourites in our native land, and have been familiar to us from our infancy.

The view from Victoria Peak is beautiful, and amply repays the exertions even of him who ascends the mountain merely for the sake of the surrounding scenery. The spectator may discover more than thirty islands, and a vast number of Chinese and European ships: he has a complete panorama of the town of Victoria, its magnificent edifices, roads, bridges, canals, and other public works which have been constructed since the occupation. The peak itself, as well as the whole ridge of the Hong-Kong mountains, is destitute of woody plants; but on the slopes, in the little groves and valleys, a mass of shrubs, chiefly evergreens, and a luxuriant herbage, are met with. I noticed *Gardenias*, *Rubi*, *Azaleas*, *Ardisias*, *Gordonias*, *Bækea frutescens*, *Anthemis Chinensis* with small yellow flowers, *Limonia citrifolia*, *Strychnos colubrina*, *Smilaces*, *Orchideæ*, and *Ferns*. Among the latter is the curious *Nephrolepis tuberosa*, Don, having large tuberous roots like Potatoes. In some of the rivulets of the mountain I found a number of gold-fishes (*Cyprinus auratus*, Linn.). Several of them were safely carried down to the town and deposited in a jar.

There are at present in Hong-Kong two gentlemen, Dr. H. F. Hance and Lieut.-Colonel Eyre, who take great interest in botany. They made several excursions with me to the most profitable localities, and pointed out some of the rarest productions of the flora. Dr. Hance was unfortunately suffering from intermittent fever, which has shaken him so much during the last four months that he will be compelled to return to England before the commencement of the rainy season. He was, therefore, unable to accompany me very frequently. Lieut.-Colonel Eyre makes almost daily excursions. He possesses, besides a considerable herbarium, a beautiful set of coloured drawings of Hong-Kong plants, chiefly executed by himself. Many of the figures represent species new to science; there is especially one, a *Camellia*, allied apparently to *C. caudata*, Wall. It has been called by Captain Champion *C. euryoides*. I do not, however, observe that name in the enumeration of Chinese plants given in the 'Journal of Botany' by him and the late Dr. Gardner.

In the evening of the 2nd of December I attended a meeting of the China branch of the Royal Asiatic Society, when the secretary read a paper by Dr. H. J. Hance, advocating the establishment of a botanical garden. It appears to be the general wish that such an institution should effect a twofold object—be useful to science, and serve as a public promenade. Yet such is the peculiarity of the ground and climate that great difficulty will be experienced in choosing an appropriate place. If a situation unprotected from the wind is selected, a single typhoon may destroy within a few hours the most valuable collection; and a sheltered position adapted for a botanical garden is hardly to be found in the vicinity of the town. Little hope remains, therefore, of seeing both objects accomplished, but, as has been observed, the advancement of science should be the primary, and promenading the secondary, aim of the institution.

Being desirous of visiting Canton, I started, accompanied by Mr. John Anderson, one of my fellow-voyagers, on the morning of the 11th of December, in a river-steamer. Our voyage was first through a groupe of islands, and then up the river, passing the town of Whampoa. The high state of cultivation, the number of villages, the tall pagodas, the gorgeous temples, the great mass of ships, and the thousands of boats loaded with human beings, are truly worth seeeing, and only to be met with in China. If a thoroughfare in the city of London is called crowded, I am actually at a loss what term to apply to the mass of boats and people seen at Canton. It is almost beyond belief. We reached our destination towards the evening, and were kindly received by Mr. W. Pastau, a German merchant, whose establishment at Victoria had already been placed at my disposal, and who here gave another proof of his hospitality.

You are probably aware how peculiarly foreigners are situated at Canton. They are only allowed to enter the suburbs: the actual city is not open to them; and as the streets of the former are very narrow and filthy, the sole place for walking is a small garden in front of the factories on the banks of the river. Formerly this garden was divided by a wall into two portions, the smaller of which—containing a neat church raised by general subscription of the Protestants—belonged to the English, the larger to the other foreign merchants; but now, after years of deliberation and many a warm discussion, the division has been pulled down, and the grounds are united. The garden contains several fine trees, *Bauhinias*, Fig-trees, Palms, &c., and is kept very neat and clean, but considering the great annual expense of maintaining it, one can but regret that it has been laid out by a person who possessed neither taste nor judgment.

It is generally the ambition of those who visit Canton to go to the so-called heights of the city. As this expedition, if undertaken by single individuals, is not considered safe—some Europeans having occasionally been murdered, others beaten or pelted with stones—a party was formed. After about two hours of uninterrupted walking through the crowded streets of the suburbs we reached the outside of the walls, without being subjected to any insult except that offered by a lot of boys and girls, sometimes amounting to more than a hundred, who constantly followed us with the annoying cry of "Foreign devils! foreign devils!" From the hills we obtained a full view of the city—a mass of buildings so closely crammed together that it was almost impossible to detect either streets, squares, or any other division; the whole presenting, if not a beautiful, at least a grand and curious spectacle.

The flora of the surrounding country was very scanty. A few isolated Pine-trees (*Pinus Chinensis*, Lamb.) grew on the heights; near the water, *Ficus nitida* and some Bamboos; on the great city walls, *Bœhmeria nivea* and *Ficus stipulata*; while spreading over hedges was seen a Hop which differs so much in aspect and size from *Humulus Lupulus*, that on a closer comparison it may possibly prove a new species. Among the cultivated plants, except the *Sagittaria Chinensis*, which was grown in great quantities in swamps, I observed nothing peculiar. The Rice and most vegetables had not yet been sown, for it was still winter, which, though not to be compared with ours, is sufficiently severe to convert sometimes during the night the surface of the stagnant water into a crust of ice.

In approaching one of the twelve gates a number of soldiers came towards us, who, with the greatest politeness, told us that we had better return whence we came. But I had made up my mind that I would go inside the walls of Canton, so, stepping boldly through the gate, I walked a few steps forward, followed by the rest of my companions, and then turned back. The soldiers understood perfectly well for what the odd manœuvre was intended. They laughed heartily, and we all parted as friends.—We now returned, and retracing our steps through the suburbs reached the factories in safety.

The people of Canton seem to attach great value to the virtues of plants. In the principal streets are stalls where medicinal herbs, roots, barks, and other vegetable substances are sold. At one of these places I counted more than fifty different drugs. There is generally, especially if a cure is performed, a man puffing up and extolling the extraordinary properties of his wares, in doing which he indulges now and then in a piece of witticism, which occasions among his gaping audience great merriment. I have never regretted so much being ignorant of the vernacular tongue as here, for whatever may be the quackery connected with the Chinese practice of medicine, a great deal, no doubt, is sound science, dearly purchased by experience. In this respect we have yet much to learn from them. The great work of Li-shi-chin, called the 'Pun-tsau-kang-muh,' or *Materia Medica*, is a valuable compilation, of which Europeans know but little, and which has never been translated into any language. It consists of no less than forty closely-printed octavo volumes, and contains several hundred figures of minerals, plants, and animals. True, the representations are imperfect, but they are in most instances not inferior to those woodcuts adorning the pages of the old "Kräuterbücher" and Herbals published in Europe shortly after the invention of printing. To identify the names and figures given by Li-shi-chin with scientific appellations, will be an interesting study to those who occupy themselves with Chinese Natural History, and, judging from the few extracts which have lately been published, the labour of translating the whole would be amply repaid by a vast amount of curious and useful information.*

In the 'Manual of Scientific Inquiry' you ask whether, in the northern provinces of China, Indigo or any other vegetable dye is used in colouring green tea. Whether different processes of dyeing are pursued in the north from those of the south I cannot say, but it is certain that around Canton, whence great quantities are annually exported, the green tea is dyed with Prussian blue, turmeric, and gypsum, all reduced into fine powder. The process is well described by Sir John F. Davis ('The Chinese,' vol. iii. p. 244 *et seq.*), who, however, falls into the strange mistake of supposing the whole proceeding of colouring to be an adulteration, and leaves his readers to infer that it is only occasionally done in order to meet the urgency of the demand, while it is now very well known that all the green tea of Canton has assumed that colour by artificial dyeing. I had heard so much about tea—copper-plates, picking of the leaves, rolling them up with the fingers, boiling them in hot water, &c., &c.,—that I became anxious to see with my own eyes the process of manufacture, of which the various books had given me such a confused idea. One of the great merchants conducted me not only to his own but also to another establishment, where the preparation of the different sorts was going forward. There was no concealment or mysterious proceeding; everything was conducted openly, and exhibited with great civility; indeed, from all I saw in the country I am almost inclined to conclude that either the Chinese have greatly altered, or their wish to conceal and mystify everything, of which so much has been said, never existed.

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* The work in question is to be had of all the principal booksellers in Canton. Price 3 dollars, 50 cents, Spanish.

The tea is brought to Canton unprepared. After its arrival it is first subjected to cleaning. Women and children are employed to pick out the pieces of twigs, seeds, and other impurities with which it happens to be intermixed. The only sorts which may be called natural are those gathered at different seasons: the rest are prepared by artificial means. Without entering into a description of all these processes, it may suffice to take one as an example. A quantity of *Bohea Saushung* was thrown into a spherical iron pan kept hot by means of a fire beneath. These leaves were constantly stirred about until they became thoroughly heated, when the dyes above mentioned were added, viz., to about twenty pounds of tea, one spoonfull of gypsum, one of turmeric, and two or even three of Prussian blue. The leaves instantly changed into a bluish-green, and, having been stirred for a few minutes, were taken out. They, of course, had shrivelled and assumed different shapes from the heat. The different kinds were produced by sifting. The small longish leaves fell through the first sieve and formed Young Hyson, while those which had a roundish granular shape fell through last, and constituted Choo-cha, or Gunpowder.

It was my particular desire to obtain the plant of which the Rice-paper is made. On my arrival, all I could learn was that the paper was manufactured from vegetable pith: respecting the name of the plant, its vegetation, and native province, the most contradictory statements prevailed. My first aim was to discover the vernacular name of the plant; after I had succeeded in obtaining this, through the aid of an intelligent missionary, Mr. Vogel, I experienced no further difficulty in collecting information, and in finding a Chinaman willing to procure specimens. The plant grows abundantly in the province of Yunnan, and in the work of Li-shi-chin there is a figure and description of it. Mr. Williams, the well-known author of 'The Middle Kingdom,' has kindly rendered that account into English for me, and the following is a transcript of his version:—"The Tung-toh-muh, or, as it sometimes is called, Tung-tsau (*i. e.*, hollow plant), grows on the sides of hills. Its leaves resemble the Castor Oil plant (*Ricinus communis*, Linn.); the stem is hollow, and has in its heart a white pith, which is prized for its lightness and whiteness, and collected in order to make ornaments for women.—Kuoh-poh says: 'It grows in Kiang-nan, is about twelve or fourteen feet high, and has leaves which are large and fleshy, like those of the *Nelumbium*. In the stem is a very white pith. Gardeners now sow the seed, and also transplant the plant. If the stem is cooked with honey, and mixed with preserved fruit, the taste is sweet and pleasant.'—Li-shi-chin says: 'The stalks of those plants which grow in the hills are large, several inches in circumference. The taste and virtues of this plant are sweet, cooling, and innocuous. It aids the secretions, stops diarrhœa and excess of urine, and helps the expectorations. A tincture of the burnt stalks reduced to powder is good for lockjaw.'"

Such is the account given by the Chinese of the Rice-paper plant, and, judging from this description, the woodcut annexed to it, and a quantity of pith which I obtained at Canton, it would appear that the Tung-toh-muh belongs to the Natural Order of *Malvaceæ*.* It is also stated that the fibre of the plant is made into paper, and some even contend that all the Rice-paper is made of fibre. This, however, cannot be the case, as the best sheets, when examined, will be found to consist entirely of medullary tissue. I send you an exact tracing of the figure. It may prove useful in identifying the plant. I have only to remark that I believe the bend does not denote that it is a creeping or winding plant, but is a liberty taken by the artist; and that the various appendages are intended for hair, though their coarseness may induce any one, at first sight, to consider them as spines or thorns.

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* The Chinese represent and describe anything they choose as the "*Rice-paper plant*:" probably because few are acquainted with it themselves. Our present volume of the Miscellany will contain a figure and description which will show the plant to be an *Araliacea*.—Ed.

The afternoon of the 13th of December I devoted to visiting some Chinese gardens. One of them, being the establishment of a rich nurseryman, and entirely devoted to his private amusement, was kept in beautiful order. It was adorned with summer-houses, and artificial ponds filled with numerous plants of *Nelumbium speciosum*, bridges, rock-work, and thousands of dwarf shrubs and trees, cultivated in glazed pots. The whole was on so grand a scale that it must have cost a great sum: if the old nurseryman made all the money by his trade, gardening must be a more profitable employment in China than it is in more civilized countries.—In the different nurseries there existed very little variety among the potted plants. Rows and rows contained nothing save Oranges, Roses, *Celosia cristata*, and Chinese *Anthemis* of many different sorts, but inferior, I thought, to those cultivated in European gardens. *Serissa fœtida* was also plentiful, and generally trimmed into various figures,—pagodas, junks, animals, &c. I observed several imitations of the deer: the antlers and every part of the animal so nicely grown that I could not help admiring them.

After a few days' stay at Canton I returned to Hong-Kong. On the 22nd of December the 'Herald' took her departure from Victoria, and, calling on the 29th at the island of Aor, she reached on the following day the harbour of Singapore.

(*To be continued.*)

BOTANICAL INFORMATION.

The following neat and just tribute to poor Douglas is translated from the German edition (published in the past year under the immediate direction of the author) of '*Earth, Plants, and Man,*' by J. F. Schouw, who, we regret to say, is grievously afflicted by a long-continued illness :—

"The introduction of ornamental plants from abroad was effected in former days by diplomatic persons, merchants, or travellers, who interested themselves about such things, and forwarded or took them home. Afterwards, travelling botanists, especially those accompanied by skilful gardeners, were the chief promoters of such importations. More recently our shrubberies and pleasure-grounds have been enriched by scientifically-educated gardeners, sent abroad expressly for that purpose. Among the latter class no one deserves greater credit than *David Douglas.* Being sent out by the Horticultural Society of London to the Northern States of America and its north-west coast, especially the banks of the river Columbia, he introduced into England a greater number of hardy trees, shrubs, and animals than any one had done before him, namely 53 woody and 145 herbaceous plants, making altogether 198 species, for the most part quite new. These plants, being hardy enough to bear the climate of Europe, have multiplied to an incredible extent in England, as well as on the Continent, so that one scarcely ever sees a garden, however humble, that is without some of these great ornaments. We may particularize the many new species of *Pentstemon*, *Lupinus*, *Œnothera*, *Gilia*, *Collomia*, several beautiful species of *Ribes*, and many sorts of Pines.

"Having done so much in America, Douglas went to the Sandwich Islands, where he fell a sacrifice to his ardent zeal, being gored to death by a wild bull, caught in a pit dug by the natives, and into which the unfortunate traveller fell. He was only thirty-six years old. If we consider the powerful moral influence which floriculture exerts on mankind, we may assuredly rank that young man among those who have honourably sacrificed their lives in the performance of their duty—not less than the soldier who dies in the field of battle. Gardening pursuits not only tend to the preservation of health, but they soften and subdue passions, and elevate the mind above commonplace things. The cottage, from which we can peep into a pretty flower-garden attached to it, is sure to be neat and well-regulated within; and if there is a flower-stand outside, we shall mostly find a well-stored bookshelf within. He, therefore, who sacrifices his life in promoting these desirable results among his fellow-creatures, does more good, generally, than he who is carried off by a bullet, not rarely to serve the schemes of ambition and covetousness."

No less just is a tribute paid to the merits of N. B. Ward, Esq., for the important services he has rendered to botany and horticulture. We find it in a letter from Professor Mirbel to Dr. Wallich :—

"La *serre de voyage* que vous avez bien voulu nous adresser, m'a été remise, et j'ai vu avec autant d'admiration que de plaisir, que les quinze espèces qu'elle contenait, étaient aussi saines que nos plantes de serre, quand, à la belle saison, nous les retirons de leur prison pour les exposer à la bienfaisante influence de l'air libre. On devait élever une statue à l'inventeur de ce procédé. On en élève à des gens qui font plus de bruit, mais moins de bien."

Sale of Nees von Esenbeck's Library and Herbarium.

Professor Nees von Esenbeck has lately published a catalogue of his Library, from the preface of which the following is an extract :— "I am," says the author, "without property : my Library and my Herbarium are all I possess, all I am able to leave to my family. In my career as a medical man, I have always considered the interests of the suffering poor as of primary, my own of secondary importance ; and, being devoted to scientific pursuits, I did not obtain a lucrative, certainly never an extensive, practice. A small estate, inherited from a relation, afforded for some years the means and leisure for cultivating science successfully ; but, during the French wars, my property became untenable, and I was induced to accept a professorship at Erlangen and the Presidency of the Imperial Academy of Naturalists. Having exchanged Erlangen for Bonn, and thus settled in Prussia, it became a question whether the Academy should have its seat in Bavaria, because my predecessor resided in Erlangen when the German Empire was dissolved, or whether it should retain its position as a national institution for the whole of Germany. The negotiations which followed ended by the Academy retaining its independence, and, as far as circumstances would permit, its position in regard to the Confederation. By my exertions the institution obtained a confirmation of its old statutes, and, during its stay in Prussia, an annual grant of 1,200 thalers. Since 1818 I have constantly laboured in restoring this ancient institution, and discharging my duties as professor in the University ; indeed, my academical duties required my whole attention, and prevented me from accepting any of the more lucrative places which from time to time became vacant. Thus it happens that, since Government has deprived me of the Professorship, my circumstances are such as compel me to part with my Library and Herbarium. Having no prospect of a pension, and no desire to solicit favours in high places, I address myself to the Members of the Academy and to my friends and contemporaries, requesting their aid in trying to dispose of my collections. If my Library and Herbarium could be sold as a whole, I should be able to realize their value, and should consider the amount as an acknowledgment of thirty years of academical services. The Herbarium consists of 297 volumes in folio and 42 volumes in quarto, and contains 80,000 sheets. It is valuable on account of its consisting chiefly of exotic specimens, including plants collected by Sieber, Preiss, Wallich, Wight, Ecklon, Zeyher, Drège, Pappe, Wied, and others, and representing most fully the Floras of Mexico, New Holland, North America, Brazil, Southern Africa, the East Indies, and Europe. It is rendered still more important by its containing the original specimens on which my monographic labours, the dissertations on the *Laurineæ*, *Solaneæ*, *Acanthaceæ*, *Hepaticæ*, *Asteraceæ*, *Cyperaceæ*, *Gramineæ*, and *Restiaceæ*, are founded. The Library is composed of 3,000 volumes, embracing the standard works on Natural History and Natural Philosophy. It is to be sold in Breslau on the first of May, 1852, by public auction, and commissions will be received by the Schletter'sche Buchhandlung in Breslau, or any other great bookseller on the Continent.

"The Herbarium, if it cannot be sold entire, is to be disposed of in sets. It has been valued at 12,000 thalers;—the *Laurineæ* at 280 thalers, the *Acanthaceæ* at 600, and the *Glumaceæ* at 3,000."

Since the appearance of the above letter, we learn with satisfaction that Professor Nees von Esenbeck has been requested to continue as President of the Academy Naturæ Curiosorum by his adjuncts, in whom the nomination exclusively rests; and that he has assented. This mark of respect towards one of the most distinguished and classical botanists of our age, who during a long series of years has contributed vastly to the celebrity of the Academy, will be hailed, not only by its own members, but by every lover of Natural Science.

Dr. Lehmann, of Hamburgh, writes on this subject as follows:—"When Nees tendered his resignation of the Presidentship of the Acad. Nat. Curiosor., he summoned his *adjuncts* to meet at Schweinfurt (the birth-place of the Academy), in order to exercise the right inherent in their appointment, to nominate a successor; and likewise to arrange for the due celebration in 1852 of the two-hundredth anniversary of the Academy. In order to 'frustrate the many intrigues that are at work,' it had been resolved beforehand, at a meeting at Erlangen, that Nees should be requested to continue President, and at the same time to form, if possible, a union between the Academy and the Annual Association of Naturalists; further, that the adjuncts had nothing whatever to do with the affair between the *Prussian Professor and the Prussian Minister of Public Instruction and Church Affairs.* This resolution was unanimous at Erlangen, and at Schweinfurt it was carried without difficulty. Nees consented to the proposed arrangement; and Lehmann and Jäger, high in medical practice at Stuttgart, were desired to take the needful steps on the occasion, including a proposition to secure to the Academy greater independence from all Government influence or control. The two hundred years' Jubilee, which happens on the 8th of January next, is to be celebrated at Wiesbaden on the 18th of September, at the meeting there of the Association of Naturalists. Our friend is writing a Programme to that effect. At Berlin, where he was deputed to gain the concurrence of Humboldt, he was most successful: the latter promised his best exertions."

HERBARIUM *of the late* GEORGE GARDNER, ESQ., *Director of the Royal Botanic Garden, Ceylon.*

Allusion has been already made to the Herbarium of the late Mr. Gardner, of Ceylon. It was hoped a purchaser would have come forward willing to take the collection entire, arranged as it is, and fastened on stout white demy folio paper, in covers of the same, according to the numbers in Endlicher's 'Genera.' Such, however, has not been the case, and, with the consent of the family, the collection has been broken up according to countries (the Cryptogamia, however, separated from them): and the collections now to be disposed of are those of—

CEYLON	about 2000 papers.

SOUTH AMERICA, excluding Brazil, including Mexico and a few from the Pacific Islands .	about	1800	papers.
NORTH AMERICA	„	1000	„
SOUTH AFRICA	„	800	„
AUSTRALIA AND NEW ZEALAND . .	„	400	„
EUROPE, including NORTH AFRICA, MADEIRA, CANARY ISLANDS, &c. . . .	about	4000	„

Any of the above sets are offered for sale. They are, as already observed, in excellent condition, all having been poisoned, and are as fully and correctly named as in any extensive general herbarium.*

Applications may be made to the Editor of this Journal, and the collections may be seen at Kew.

Plants of MOUNT OLYMPUS.

Le Professeur Clementi a l'honneur de prévenir les Botanistes qu'il peut mettre à la disposition des amateurs la collection des plantes recueillies par lui dans son dernier voyage sur l'Olympe Bythinique et en d'autres contrées de l'Orient. Le prix de la centurie est de 35 francs, y compris un exemplaire du 'Sertulum Olympicum,' contenant la description de quelques espèces nouvelles et des observations sur les plus remarquables. La collection tout entière a été soigneusement étudiée, et les espèces qui la composent, au nombre d'environ 125 à 150, ont été nommées avec autant d'exactitude que possible, avec le concours des savants botanistes MM. Gay, Spach, et Webb. MM. les Souscripteurs sont priés de s'adresser—à Paris, à M. B. Webb, Avenue de Marbeuf, 15 ; à Gênes, à M. le Professeur de Notaris ; en Angleterre, chez Mr. R. Heward, 5, Young Street, Kensington.

NOTICES OF BOOKS.

Beiträge zur Kenntniss des inneren Baues der ausgewachsenen Mooskapsel, insbesondere des Peristomes. Von S. LANZIUS-BENINGA, Ph.D.

Much as has been written about Mosses, little is known of their internal organization, and the various attempts to classify them in natural sub-tribes and genera are but so many artificial arrangements. Dr. Lanzius-Beninga, in the publication above quoted (which, we believe, is a reprint of his article contained in vol. xxii. of the Nova Acta Acad. Leop. Carol. Nat. Cur.), has tried to establish a more philosophical system, and shown, in a series of interesting observations, that the internal structure of the capsule (*theca*) and the peristome offers the best means of classifying the Mosses. He finds that the genus *Sphagnum* presents the most simple, *Polytrichum* the most complicated structure. He also proves that a knowledge of the internal structure of the capsule is most useful in determining species. "All *good* species," says Dr. Lanzius-Beninga, "present sufficient marks to distinguish them from their allies. In 1846, I found near Göttingen a Moss which seemed to be an intermediate form between *Dicranum varium* and *D. Schreberianum*: in analyzing the capsules of the latter two microscopically, the identity of the two species was at once apparent." The work contains forty-six pages and forty-one figures.—(*B. Seemann.*)

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* Since the above notice was written, all have been disposed of with the exception of the North American, South African, Australian, and European collections (amounting to about 6,200 papers), for which the family is willing to accept an extremely small sum.

Bericht über die Leistungen in der geographischen und systematischen Botanik *während des Jahres* 1848. *Von* Dr. A. Grisebach. 8vo. Berlin. 1851.

This work is a continuation of Professor Grisebach's former labours, an annual report of all that has been done in the field of systematical and geographical botany. It gives an account of every new work, notices its place of publication, and furnishes occasionally extracts of considerable length. It also points out the smaller articles contained in periodicals, and arranges them under different heads. At present, when it is expected that every one knows thoroughly, or at least the best part of, the literature of other countries, a compilation of this nature must be to every working botanist an acceptable acquisition; and, indeed, the large sale Professor Grisebach's work enjoys on the Continent is a sufficient proof of its usefulness. (*B. Seemann.*)

On the Camphor-tree of Sumatra (Dryobalanops Camphora, *Colebr.*); *by* Dr. W. H. de Vriese, Professor of Botany at the Royal University of Leyden. (*Kindly translated from the Dutch by* Miss Mary Anne de Vriese, *for this Journal.*)

For many years past a distinction has been made between the Camphor-tree of Sumatra and Borneo, and that of Japan and China. The Japan or Chinese Camphor-tree is *Laurus Camphora*, L., belonging to the Laurels. It is a large and sometimes very thick tree, and may be recognized at first sight by its shining triple-nerved leaves. The camphor is partly obtained from this tree by incisions in the trunk, the juice that streams out of it being gathered in bowls. This method produces the purest camphor. Another kind is obtained by decoction and distillation of the wood in an iron pot, furnished with a cover, or covered with another oblong iron pot, filled with straw or reeds. The camphor is sublimated by an elevated temperature, adheres to the straw, and is exported to Europe in slices. Formerly the camphor was only refined in Holland; the process is now known elsewhere also. This is the camphor commonly sold in Europe, and is generally of a low price. Several other plants, chiefly of the Order *Labiatæ—Mentha, Salvia*, &c.—contain camphor, but in a small quantity. The camphor of Sumatra and Borneo, as well as the tree producing it, was always supposed to differ from that of Japan and China. At a remote period it was thought to be more precious and more medicinal than that of Japan, and at the present day the camphor of Sumatra is sold at a very high price, particularly to the Chinese; that of Japan and China, on the contrary, may be purchased at a low price.

The most varying accounts of the history of the Camphor-tree of Sumatra are given both by earlier and more recent authors. Some of these notices may be considered as entirely contrary to the truth, others are inaccurate, and very few are exact. The examination of them all would occupy too much time.

The Camphor-trees of Sumatra and Borneo were mentioned in the latter part of the sixteenth century. The first mention of it occurs in the "Eerste Scheepvaart der Hollandsche natie naar Oost-Indië, 1595–7," to be found in "Begin en Voortgangh van de Vereenigde Nederlandsche Geoctroijeerde O. I. Compagnie; gedrukt in den jare 1646."

What is told us of this tree by Valentyn, in the year 1680, is in many respects remarkable, and proves at the same time how much the tree was already considered worthy of attention. Mich. Bernh. Valentyn gives the following statement on this subject, which was in 1680 communicated to him by Arent Sylvius:—

"The Camphor-tree is found in several forests. Without any culture or human aid, it grows luxuriantly like other forest-trees, and elevates its lofty, heavy, unbranched, and straight trunk, and forms a crown of moderate extension, but which may be called small in proportion to the trunk, and which is furnished with few and not heavy branches.

"The leaves are oblong ovate, with a strong lengthened point ('apice prolixe extenso'). In a dry state they are of a dark green colour. They are hard, tough, and smell like camphor. This is said of the tree of Baros, for in that of Java (that is, of Japan) the leaves are differently formed and much larger than those of the tree first mentioned, as may be seen by the seventh plate of Valentyn.

"The bark is fine and reddish; when the tree becomes old and thick, it falls off in large pieces: by this property the tree may be partly distinguished from others. Roots several feet in length are also often to be seen above the ground.

"The fruit, which is obtained with difficulty in consequence of the height of the tree, resembles more a flower than a fruit, as it has more or less oblong and thick variously-coloured leaves, which are generally red, violet, yellow, or greenish, and enclose the fruit like a hazel-nut. The fruit has a hard shell; the enveloping leaves are elevated above it, and are not pointed, but have red tips, spread out above like the petals of a tulip. The fruit, which, like the leaves, has a taste of camphor, is not only useful for medicinal purposes, but may be employed as food, and, like many other fruits, makes a good confection. The fruit is not easily obtained, as it is dangerous to penetrate the woods.

"When the tree has attained some size, the resin does not stream out like benzoin; but near the pith, or heart, are natural fissures, in which the juice accumulates, which, gradually coagulating, sticks to the wood in the form of small pieces of camphor.

"If those who have the care of the Camphor-trees perceive that in some of the trees there is camphor (which they pretend to discover by some signs known to them), they order the trees to be cut down, strip them of their leaves and bark, and cut away the outer wood to the marrow or heart, in which are the apertures or fissures; they cut that wood into small pieces, and therein the camphor is found, beautifully brilliant. They have a method of scraping it from the wood with small instruments; and after purifying the scraped-off camphor (*camphora abrasa*) they seldom obtain more than from two to three pounds. Of that, one-twentieth is generally paid as a tribute; the rest remains in their possession.

"Camphor-oil, the peculiar juice of the tree, exudes from its fissures and cavities, and is carefully collected. The oil is so fine, that a paper penetrated by it and held near a flame, catches fire immediately and burns till all the oil is consumed.—*Oct.* 2, 1680."[*]

We must not omit to mention that Valentyn[†] has given a drawing of the leaves of a Camphor-tree of Baros, which agrees very well with the objects before us, so that we do not doubt that Arent Sylvius, from whose accounts this chapter is written by Valentyn, really knew the tree, and in what respects it differs from that of Japan.

I would recommend further the notices given of this tree by Breyne,[‡] Grimm,[§] Rumphius,[||] Charles Miller,[**] Adolph Eschelskroon,[††] Radermacher,[‡‡] Houttuyn,[§§] Gærtner,[||||] Colebrooke,[***] Roxburgh,[†††] and William Jack.[‡‡‡]

I will here repeat the diagnostic description given of this tree

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[*] Valentini, India Literata, seu dissertationes epistolicæ de plantis, &c., p. 488. Francof. 1716, fol.

[†] Mich. Bern. Valentini Hist. Simpl. Reformata, lib. ii. sect. iv. p. 250.

[‡] Prodr. fasc. Pl. rar., 1680.

[§] Obs. de Arb. Camphoræ, in Miscell. Cur. sive Ephem. Nat. Curios. 1683, p. 371. tab. c. f. 33.

[||] Herb. Amb. Auct. cap. lxxxii. p. 67. 1755.

[**] Extracts from several Letters from Mr. Charles Miller, giving some account of the interior parts of Sumatra.—Phil. Trans. vol. lxviii. p. 161, 170. 1778.

[††] Beschr. van Sumatra, insonderheid van desselfs Koophandel. Door Ad. Eschelskroon, p. 61–3. 1783.

[‡‡] Verhand. van het Bataviaasch Genootschap, vol. iii. p. 27. 1785. vii. Batavia. 1814.

[§§] Verh. der Holl. Maatsch. van Wetensch., pl. viii. 1784.

[||||] Suppl. Carpol. vol. iii. 49.

[***] Asiatic Researches, vol. xii. p. 537. 1818.

[†††] Flor. Ind. vol. ii. p. 617. 1832.

[‡‡‡] Hooker's Companion, vol. i. p. 253. 1835.

elsewhere, founded upon specimens from Sumatra collected by Dr. Junghuhn.

DRYOBALANOPS, *Gærtn.*, *Colebr.*, *Jack.*

Calyx inferus, monophyllus, cupulatus, limbo demum 5-alato, alis patentibus. *Corolla* infera, 5-partita (vel 5-petala, petalis basi junctis), laciniis ovato-lanceolatis. *Stamina* hypogyna, plurima, monadelpha, annulo in basi corollæ inserta; antheræ subsessiles, biloculares, elongatæ, lineares, loculis membranaceis, mucronatis. *Ovarium* superum, ovatum, stylo post anthesin sæpe persistente acuminatum, triloculare, loculis biovulatis. *Stylus* filiformis, staminibus vix longior. *Stigma* vix distinctum (nec capitatum). *Capsula* unilocularis, trivalvis, monosperma, calyci aucto partim insidens, partim ejus laciniis auctis alæformibus cincta. *Seminis embryo* exalbuminosus, inversus, cotyledonibus inæqualibus carnosis chrysaloideo-contortuplicatis.—Arbores *excelsæ Sumatram insulam habitantes*, foliis *alternis coriaceis*; stipulis *caducis*; floribus *paniculatis, terminalibus et axillaribus*.

Dryobalanops *Camphora*, Colebr.; foliis ovatis obtuse acuminatis basi acutis superne nitidis dorso opacis parallele venosis carinatis.

HAB. Region. 0–1000′; prope Tapanuli et Huraba.

SYNONYMIA.

De arbore Camphoræ litera Wilhelmi ten Rhyne ad Jacob Breynium: Prodr. ej. fasc. rar. plant. Gedani, 1683.

Arbor Camphoræ, Grimm, Observ. in Miscell. Cur. sive Ephem. Nat. Curios. 1683, p. 371, cum tab. fig. 33 (mala).

Arbor Camphorifera, Valentini, Ind. lit. p. 488, 1716, ex auctoritate Arent Sylvii.

Arbor Camphorifera, Mich. Bernh. Valentini Hist. Simpl. Reformata, lib. ii. sect. vi. p. 250. Rumphii Herb. Amb. Auct. cap. lxxxii. p. 67. 1755. Ch. Miller, in Phil. Trans. vol. lxviii. p. 1. pp. 161, 170, 188.

Laurus foliis ovalibus acuminatis lineatis, floribus magnis tulipaceis, Houttuyn, Nat. Hist. ii. 2. pp. 318, 319; Verh. Holl. Maatsch. van Wet. xxi. 272.

Dryobalanops aromatica, Gærtn.? Suppl. Carpol. vol. iii. 49.

Dryobalanops Camphora, Colebr., Asiatic Researches, vol. xii. p. 537, 1818.

Dryobalanops Camphora, Colebr., in Jack's Descr. of Malayan Plants, Hook. Comp. vol. i. p. 253. 1835.

Shorea camphorifera, Roxb.? Fl. Ind. vol. ii. p. 617. 1832.

Pterygium teres, Correa? Ann. du Mus. vol. x. p. 159. t. 8. f. 1.

Dryobalanops Camphora, Colebr. in Hayne's Arzn. Gew. xii. 17.

Dryobalanops Camphora, Colebr., Korthals, Verh. over de Nat. Gesch. der Oost-Ind. Bezitt. (Kruidk.) p. 45.

ADUMBRATIO.

Arbor 100′; trunco valido, stricto, columnæformi, 60′–70′ alto, 11′ crasso, ad basin expansionibus laminaribus radiantibus instructo; cortice exteriore ibidem fisso, scabro, strato resinoso, splendente, partim albo partim flavescente, sæpe crasso, pellucidoque instructo; sursum fusco, demum in ramis ramulisque e griseo-fuscescente obtecto. Lignum ipsum fuscum.

Folia alterna (nec opposita), petiolata; petiolis dorso rotundatis, superne sulcatis, sæpe curvatis vel inflexis et ramis accumbentibus, 0,01–0,02 longis, immo longioribus; ovatis, basi acutis, apice subito angustatis, obtuse acuminatis, margine integerrimis, versus apicem subundulatis, utrinque glabris, coriaceis, superne nitentibus, medio sulcatis, dorso opacis carinatis, parallele venosis, demto petiolo 0,06–0,07 longis, et 0,03 fere latis.

Stipulæ geminatæ, subulatæ, caducæ (Colebr.); ovatæ, acutæ (Korth.); in speciminibus Junghuhnianis nullæ. An forsan omnes lapsæ?

Pedunculi axillares et terminales, breves, incrassati.

Calyx (junior non visus) adultus auctus, hemisphæricus, campanulatus, basi lignosus, admodum crassus; interna structura magnum referens numerum lacunarum aërearum, in quinque excrescens alas foliaceas, coriaceas, rigidas, erectas, patentes, reflexas, sinu exciso rotundato amplo a se invicem distinctas. Alarum formæ et diametri diversæ sunt pro diverso evolutionis stadio; in fructibus immaturis magis sunt elongatæ, et versus medium et apicem dilatatæ, 0,07 longæ et fere 0,01 latæ (spec. Houtt. et Jungh.) et in illo stadio quoque erectæ; in maturis (Colebr.) contra magis dilatatæ, vere spathulatæ, reflexæ. Structura alarum est parallele nervosa et inter nervos reticulata. Calyx totus terebinthinam redolet.

Corolla (secundum specimen lectum a Millero fil. et nobiscum communicatum ab Ill. Rob. Br. ex Mus. Brit. Lond.), caduca, monopetala, 5-partita, laciniis ima basi inter se coalitis membranaceis, 0,015 longis, 0,004 latis, lanceolatis.

Stamina in fundo corollæ annulo proprio dentibus triangularibus acutis erectis instructo insidentia, numerosa. In specim. Mill. 15 numeramus, sed plura lapsa sunt. Filamenta brevissima; antheræ biloculares, introrsæ, in dorso linea media (connectivo) in mucronem ultra loculos elongata notatæ; loculi membranacei, tota longitudine dehiscentes, marginibus loculorum involutis.

Capsula glandem quercinam simulans, supera, ovata, stylo coronata, lignosa, fusca, externe striis longitudinalibus tenuibus prædita, basi cupula rotundato-gibba hemisphærica excepta, eique firmiter adhærens, unilocularis, trivalvis, valvis æqualibus crassis, monosperma, 0,035 longa, 0,015 lata (Colebr.), 0,03 longa, 0,015 lata (Gærtn. si eadem est ejus species quæ Colebrookii, quod incertum).

Semen solitarium, magnum, cavitati capsulæ respondens, ovato-oblongum, antice sulcatum, integumento fusco ad sulcum intus flexum, et cum columna centrali colliquescens. Columna centralis e fundo cupulæ calycinæ oriunda, ad verticem adscendens, semen in illa directione in duos dividens lobos dorso connatos, inde aucta; lobis longitudinalibus, mollibus, columna brevioribus, intra cotyledonum plicas sese demergentibus; duobus majoribus lateralibus ad ventrem recurvis; duobus minoribus dorsalibus citra axem productis divergentibus (Gærtn.).

Albumen nullum.

Embryo constans 2 cotyledonibus, carnosis, imparibus. Externus maximus, seminis formam constituentibus; interior multo minor, lateralis, subcochleatus. Plumula simplex, conica, diphylla. Radicula longa, sursum directa, in sulco cotyledonis externi contenta, apice conico obtusiusculo terminata, adscendens, supera. (Juxta spec. Marsdeni Mus. Brit. Londinensis et descript. Cel. Gærtn.)

The tree here described belongs to the Natural Order *Dipterocarpeæ* (Bl., Lindl.). All the trees belonging to this family are gigantic and of a majestic appearance, and are chiefly remarkable for the beautifully coloured and winged fruits. All of them contain more or less of a balsamic resin. *Shorea robusta* produces a resinous substance, which is used at the religious solemnities of the Indians. *Vateria Indica* yields a resin which in India is used as copal, and is known in Europe

as *anime*-resin. The Javanese species of *Dipterocarpus* are all resinous, and the resin is said to be used as copaiva-balsam.

The Camphor-tree is one of the loftiest trees of the Indian Archipelago. In its dimensions it surpasses even the Rasamala-tree (*Altingia excelsa*) of Java. It is the giant among the trees of the East Indies. Its trunk rises vertically, and divides into branches only at the top, forming a somewhat convex crown. A person looking over the tops of the trees from an elevated place, for instance, from the mountains behind Loemoet, at a height of from three to four hundred feet, can without difficulty count the full-grown Camphor-trees that are scattered in the forest; for, while the *Anonaceæ*, *Acacias*, *Fagræœ*, and Figs, which compose the chief mass of trees in those forests, are eighty to a hundred feet high, the Camphor-tree, with its gigantic crown, is seen rising fifty or even a hundred feet above them, as the steeples of churches appear above the roofs of the houses in a town. The following are its dimensions, compared with those of the Rasamala (*Liquidambar Altinghiana*) :—

——	Thickness of the trunk.		Length of the trunk.	Diameter of the crown.
	Beneath.	Above.		
Camphor-tree .	7–10 ft.	5–8 ft.	100–130 ft.	50–70 ft.
Rasamala . .	5–7	3–5	70–90	40–50

Near the ground the Camphor-tree gives out radiating extensions of the trunk and root, such as several travellers have represented in their descriptions. At the lower part of the tree the bark is rugged, with fissures, and often covered with a resinous and glittering, sometimes yellowish substance, which is transparent, and consists either of camphor or of camphor and its peculiar resin. Higher up, the bark is of a dark grey colour, here and there covered with lichens, but not with *Lianes*, like so many other trees.

The position of the leaves is alternate, as shown in the drawing of Houttuyn. Colebrooke describes a branch without fruits, *with opposite leaves*. Has *Dryobalanops Camphora* sometimes a position of leaves such as Colebrooke describes? We can scarcely doubt the accuracy of his descriptions—they have too much the appearance of truth about them; and all that he has communicated of the tree and of the substances which it produces, gives us the conviction that Mr. Colebrooke must have had specimens of this tree; we are not, however, certain of the correctness of his figure.

The leaves seen by us differ from those of Miller's specimens, which we saw in 1850 in the British Museum (which are much larger), and from those of Colebrooke's drawing and description; the largest leaves of the latter being 0,175 long and 0,05 broad. But this difference is perhaps explained by ours being smaller, because they are on flower-bearing branches. They most resemble the description given by Houttuyn.

Most authors speak of stipules (Colebr., Korth.). We have not seen them, and suppose that our specimens have lost them; we must therefore refer our readers to what the two last-mentioned botanists have written on the subject.

The calyx has many modifications in the form of its base and wings, as well as in the direction of those wings, which are sometimes nearer to each other, or more modified or reflexed. The great diversity which we have observed in our specimens persuades us that there is no reason for accepting more species. Colebrooke has seen and drawn objects in full growth. In the different states of development in which we saw this calyx, we always found natural cavities in its tissue, chiefly in the woody part. In the interior it is resinous, and emits a smell of turpentine.

We have not space for further descriptions of the crown, the stamens, and the fruit. The albumen seen by us was in some of Marsden's specimens in the British Museum, preserved there in spirits: it agrees entirely with the figure and description given by Gærtner. In the specimens at our disposal, which were not preserved in spirits, the albumen was consumed. For these specimens we are much indebted to the liberality of Mr. Robert Brown. Through lack of young specimens, the structure of the ovary has been till now but imperfectly known. The reason is that naturalists have not had the opportunity of getting specimens at the time of the development of the flowers.

Dryobalanops Camphora, Colebr., must be the plant mentioned by Grimm, ten Rhyne, Valentyn, and Rumphius. It is the same as that mentioned by Miller, and which M. Radermacher presented to Houttuyn. It belongs, undoubtedly, to the same genus as Gærtner has represented as *Dryobalanops*, but it is doubtful what he means by his

D. aromatica, which, he says, occurs in Ceylon, and yields the best cinnamon. Here may be an error. The uncertainty is increased by his not giving characters of the species; and the identity with the species of Colebrooke cannot be decided. There seems to be some mistake in the account of Gærtner, for no *Dryobalanops* has ever been found in Ceylon, and it is impossible that a *Dryobalanops* should produce cinnamon, and that even the best in Ceylon. Perhaps he was misled by inaccurate statements on the labels of some of Sir Joseph Banks's specimens. Hitherto our efforts to arrive at some certainty in this case have been unsuccessful. If it be decided that the plant mentioned by Gærtner is the same as that of Colebrooke, then, according to the opinion of some botanists, there would be a reason for adopting the name *D. aromatica* of Gærtner, instead of that of Colebrooke. But, first, that reason does not yet exist; and we think that we should maintain the system established among botanists, that no priority can be given in science to a name of a plant unaccompanied by a description. It is possible that Gærtner had the description of his species in manuscript, but he did not publish it. *Shorea*, Roxb., and *Pterygium*, Corr., have been described later than Gærtner's *Dryobalanops*, and must therefore be represented here as synonymous.

(*To be continued.*)

FLORULA HONGKONGENSIS: *an Enumeration of the Plants collected in the Island of Hong-Kong, by* Capt. J. G. Champion, 95*th Reg.*, *the determinations revised and the new species described by* GEORGE BENTHAM, ESQ.

(*Continued from* vol. iii. p. 334.)

RHAMNEÆ.

1. Paliurus *Aubletii*, Schult. Syst. vol. v. p. 343.

A moderate-sized unarmed tree, with the appearance of the Jujube, cultivated in, if not indigenous to, Hong-Kong. It is certainly a *Paliurus*. The leaves are glaucescent. The fruit is nearly smooth, with the wing coarsely crenated, three-celled, three-seeded; the seeds erect, pretty large, surrounded by a slight fleshy coating; testa bony, hard. (*J. G. Champ.*)

2. Ventilago *Maderaspatana*, Gærtn.—Wight et Arn. Prod. vol. i. p. 163.

Ravines, Hong-Kong.

3. Berchemia *lineata*, DC. Prod. vol. ii. p. 23.

Ravines, Hong-Kong.

4. Sageretia *theezans*, Brongn.

Ravines, Hong-Kong, with the two preceding.

This appears to be the same plant as *Berchemia hamosa*, Wall. Cat. n. 4253, a species closely allied to, if not a mere variety of, the more common *Berchemia parviflora*, Wall., all having so exactly the habit of the *Sageretiæ*, and not of *Berchemia*, that if a more perfect knowledge of them proves them really to belong to the latter genus, the separation of the two genera is rendered most unnatural.

5. Rhamnus *virgatus*, Roxb. Fl. Ind. ed. Car. et Wall. vol. ii. p. 351.

Victoria Peak, flowering in April. The leaves are rather smaller and the crenatures fewer than in the common Himalayan form, but I can find no other difference.

6. ? Androglossum *reticulatum*, Champ., gen. nov. *Rhamneis* affine.

Gen. Char. ANDROGLOSSUM. *Calyx* 5-partitus, laciniis æstivatione valvatis? mox apertis persistentibus. *Petala* 5, toro dilatato (v. disco calycis tubo parvo hemisphærico adnato) inserta, laciniis calycinis alterna et sublongiora, lata, concava, æstivatione imbricata, 2 exteriora. *Stamina* 5, petalis opposita et cum iis inserta. *Filamenta* complanata, ima basi petalis subconnata, apice inflexa. *Antheræ* ovatæ, loculis parallelis longitudinaliter dehiscentibus. *Ovarium* sessile, basi disco membranaceo 5-dentato cinctum, bipartibile, carpellis fere liberis, unilocularibus. *Styli* 2, vix coaliti, breves, summo apice tenuiter et obtuse stigmatosi. *Ovula* in loculis (v. carpellis) ovarii gemina, angulo centrali affixa, collateralia, horizontalia, obovoideo-subpeltata, amphitropa. *Fructus* (carpello uno abortiente) simplex, oblique depresso-globosus, subdrupaceus, pericarpio tenuiter carnoso, endocarpio crustaceo. *Semen* fructui conforme, prope basin affixum, ut videtur albuminosum, sed in specimine omnia immatura et embryo nondum accretum.—Species unica, *A. reticulatum,* frutex videtur, ramulis teretibus glabris, novellis compressiusculis. *Folia* exstipulata, alterna, petiolata, elliptico-oblonga, obtusa vel acuminata, integerrima, basi acuta, 3–5 poll. longa, 1–1½ poll. lata, coriacea, gla-

bra, reticulato-venosa, venis primariis a costa divergentibus paucis longe ante marginem anastomosantibus. *Racemi* foliis breviores, puberuli. *Pedicelli alterni*, dissiti, breves, 1–2-flori. *Bracteæ* lineares, breves, v. lanceolato-subfoliaceæ acutæ, basi in petiolum angustatæ, 3–5 lin. longæ. *Flores* circa lineam diametro. *Calyx* puberulus, laciniis lanceolato-triangularibus acutis. *Petala* glaberrima, $\frac{3}{4}$ lin. longa, vix longitudine angustiora. *Filamenta* crassiuscula, plana, ima basi tenuia, summo apice contracta, petalis paulo breviora. *Fructus* immaturus semipollicem diametro.

This plant, gathered in October 1848, differs from all *Rhamneæ* known to me in the structure of the ovary, the carpels being almost if not quite distinct, and the ovules two in each carpel horizontally attached to the axis instead of being solitary and erect from the base. The arrangement of the stamens and petals is precisely the same as in *Rhamneæ*.

TEREBINTHACEÆ.

1. Rhus *succedaneum*, Linn.—Wight, Ic. t. 560.

A common tree in the Happy Valley. Flowers and fruit in summer.

2. Rhus (Sumac) *hypoleuca*, Champ., sp. n.; foliolis 11–17 ovato-lanceolatis acutiusculis basi inæqualibus supra ad venas vix tomentellis subtus ramulis petiolisque albo-tomentosis petiolo tereti, panicula terminali sessili foliis multo breviore, drupis rubro-villosis.—*Folia* pedalia, foliolis 1½–3-pollicaribus brevissime petiolulatis. *Paniculæ* pyramidatæ, ramosissimæ, tomentosæ, multifloræ. *Bracteæ* minutæ. *Pedicelli* calyce breviores. *Flores* fere 2 lin. diametro. *Petala* ovata, obtusa, calyce plus duplo longiora. *Discus* 10-crenatus. *Stamina* florum fertilium ovario villoso breviora.

A common shrub on Mount Gough, flowering in autumn.

CONNARACEÆ.

1. Rourea *microphylla*, Planch. Linnæa, vol. xxiii. p. 421.

Rather abundant in ravines. There are two very distinct varieties in Hong-Kong, one bearing the leaflets much fewer and smaller, the inflorescence more lax, the flowers fewer and perhaps rather smaller than in the other, but I can find no essential differences, and I have seen several intermediate forms in other collections.

Leguminosæ.

1. Crotalaria *calycina*, Schranck.—Benth. in Lond. Journ. Bot. vol. ii. p. 564.

Near Chek-chow. (*Col. Eyre.*) The colour of the flowers is in the above-quoted paper given as blue, whereas it is of a pale sulphur-yellow. The mistake arose from the confusion by several authors of this species with the *C. sessiliflora.*

2. Crotalaria (Calycinæ) *brevipes*, Champ., sp. n.; erecta, a basi ramosa, stipulis minutis, foliis linearibus supra glabris v. rariter pilosis subtus cauleque adpresse pilosis, racemis terminalibus brevibus, floribus subsessilibus, bracteolis sub calyce bracteisque lanceolatis linearibusve, calycis barbato-villosi laciniis superioribus late oblongis corollam superantibus, ovario multiovulato, legumine glabro calyce $\frac{1}{4}$ breviore.

Gathered in August 1849, on the borders of an old estuary at East Point, in sandy soil.

Very near to the common *C. sessiliflora*, but differs at first sight by the large calyxes, nearly those of *C. calycina.* It is a plant of about a foot high, branching from the base, covered all over with sericeous hairs except the upper side of the leaves. These are as much as $3\frac{1}{2}$ inches long by 2 to $2\frac{3}{4}$ lines broad. Inflorescence of *C. sessiliflora*, but flowers usually fewer. Upper segments of the calyx half an inch long when the flower opens, full 9 lines when in fruit. Corolla light blue; standard with dark streaks; keel white, with the extremity blue. Pod black when ripe, about half an inch long.

3. Crotalaria *albida*, Heyne.—Benth. in Lond. Journ. Bot. vol. ii. p. 567.

Victoria Peak and other localities, flowering in summer.

4. Crotalaria *elliptica*, Roxb.—Benth. l. c. p. 580.

Common all round Chek-chow. (*Col. Eyre.*)

5. Indigofera *hirsuta*, Linn.

On the Race-course, flowering in autumn.

6. Indigofera *venulosa*, Champ., sp. n.; suffructicosa glabra, foliolis 5–13 late ovatis orbiculatisve obtusissimis v. mucronatis utrinque viridibus reticulato-venosis subtus vix pilosulis, racemis laxis folio brevioribus, calycis glabri dentibus brevibus, corolla puberula, ovario deflorato glaberrimo.—*Suffrutex* pedalis. *Caules* erecti, tenues, glabri, vix

ramosi. *Stipulæ* minutæ, setaceæ. *Foliorum* petiolus communis 4-pollicaris, tenuis, glaber, prope basin sæpe glandulam fert plus minus distinctam. *Stipellæ* setaceæ. *Foliola* petiolulata, ultima pollicem sæpe excedentia, cætera minora, pleraque late ovata et obtusissima v. retusa, interdum plus minus acutata et mucronata, omnia quam in speciebus affinibus rigidiora, et utrinque insigniter reticulato-venulosa. *Racemi* folio paulo breviores, vix infra medium floriferi, pedunculo tenui glabro. *Bracteæ* minutissimæ. *Pedicelli* 1¼ lin. longi. *Calyx* pedicello brevior, late cyathiformis, dentibus acutis tubo brevioribus. *Corolla* 7 lin. longa, petalis extus pubescentibus roseo-lilacinis. *Vexillum* sessile, obovali-oblongum; *alæ* vexillo æquilongæ, angustæ, obtusiusculæ, ungue brevissimo vix conspicuo; *carina* alis paulo brevior, submucronulata, unguibus fere lineam longis. *Stamen* vexillare a basi liberum, cætera alte connata; *antheræ* more generis connectivo mucronatæ. *Ovarium* glaberrimum, multiovulatum. *Stylus* glaber, imberbe, apice subcapitato-stigmatosus.

Victoria Peak, Hong-Kong; April or May. (*J. G. Champion.*) Gathered also by Fortune, on Silver Island (n. 43). The fruit has not been seen. The species is allied to *I. macrostachya*, Vent., and *I. decora*, Lindl., both from China; it differs from the former by its smoothness, from the latter by the smaller and rounder leaflets and smaller flowers, from both by its low stature and by the venation of the leaflets.

7. Tephrosia *purpurea*, Pers.

8. Zornia *diphylla*, Pers., var. angustifolia, impunctata.

The two species into which the *Z. diphylla* has been divided, the American *Z. reticulata* and the Eastern *Z. angustifolia*, are usually distinguished by the pellucid dots of the bracts present in the latter, absent in the former; and our Hong-Kong plant, as well as several specimens from the Indian Archipelago, would thus be referable to *Z. reticulata*, though with the habit of *Z. angustifolia*, and unless some better character be found to distinguish them, we must re-unite them under Persoon's name as suggested by Vogel.

9. Æschynomene *Indica*, Linn.

The three last common East Indian species are from the estuary at East Point.

10. Uraria *crinita*, Desv., *β*, *macrostachya*; racemis primariis ultra-

pedalibus, bracteis 8–10 lin. longis insigniter comosis, legumine glabro.

Common near the Albany Barracks, flowering in summer.

11. Pteroloma *triquetrum*, Desv.—Benth. in Plant. Jungh. p. .*—*Desmodium triquetrum*, DC.

Victoria Peak.

12. Phyllodium *pulchellum*, Desv.—Benth. in Plant. Jungh.—*Dicerma pulchellum*, DC.

This common East Indian plant is rare in Hong-Kong; found only at the estuary at East Point.

13. Phyllodium *elegans*, Benth. in Pl. Jungh.—*Dicerma elegans*, DC.

Common in Hong-Kong on low ground.

14. Desmodium (Nicolsonia) *polycarpum*, DC.—*D. nervosum*, Vog. Pl. Meyen., p. 28.

Victoria Park. Vogel's description of his *D. nervosum* from China appears to me to answer exactly to this species, which is one of the widest spread of the Eastern *Desmodia.*

15. Desmodium (Heteroloma) *reticulatum*, Champ., sp. n.; foliolis ovali-ellipticis oblongisve utrinque obtusis supra glabris subtus pallidis cauleque pilis raris conspersis, stipulis lanceolatis acuminatis, racemo gracili, bracteis deciduis basi latis setaceo-acuminatis summis comantibus, pedicellis brevibus geminis, alis carina paulo brevioribus.—*Ramus* adest unicus teres, pilis perpaucis adpressis conspersus. *Stipulæ* brunneæ, striatæ, erectæ, cum acumine setaceo 4 lin. longæ. *Petiolus* communis gracilis, 6–10 lin. longus. *Foliolum* terminale pollicem longum, semipollicem latum, apice basique obtusum v. retusum, supra viride et nitidulum, subtus pallidum v. glaucum, venis primariis arcuatis reteque venularum utrinque conspicuis; lateralia minora. *Stipellæ* setaceæ. *Racemus* semipedalis, in specimine simplex, a basi florifer, rachi pubescente, floribus per paria dissitis. *Bracteæ* ad apicem racemi 2–3 lin. longæ, late lanceolatæ, striatæ, glabriusculæ, alabastra longe superantes, at non imbricatæ. *Pedicelli* tenues, vix 2 lin. longi. *Calyx* lineam longus, tenuiter membranaceus, glaber, laciniis 5 lanceolatis acutis tubo æquilongis, inferiore paulo longiore. *Vexillum* fere 3 lin. longum, obovali-

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* The part of the 'Plantæ Junghuhnianæ' which contains my papers on Javanese *Leguminosæ* has not yet reached me; I am, therefore, unable to insert the precise references to the pages.

orbiculatum, emarginatum, subsessile, glabrum. *Alæ* dimidiatæ, late obovatæ, ungue brevi. *Carina* incurva, obtusa. *Stamen* vexillare a basi liberum. *Ovarium* pilis paucis ciliolatum, sessile.

A single specimen gathered in Hong-Kong, without any note of the precise locality. It appears to be allied to the East Indian *D. concinnum*, but is much smoother than any species I am acquainted with of the same groupe.

16. Lespedeza (Eulespedeza) *cuneata* (G. Don, Gard. Dict. vol. ii. p. 307); ramis virgatis, petiolis brevibus, foliolis cuneato-linearibus obtusissimis retusisve mucronatis subtus strigoso-pubescentibus, floribus axillaribus fasciculatis subsessilibus, legumine orbiculato calycis lacinias subæquante.—*Hedysarum junceum*, Roxb. Pl. Ind. vol. iii. p. 362, non Linn.—*Lespedeza juncea*, DC. Prod. vol. ii. p. 348 (excl. syn. Linn., Pers., et Thunb.), et eo teste *Anthyllis cuneata*, Dum. Cours.

Rare in Hong-Kong; found on the side of a hill at the estuary, East Point, flowering in August.

This species, although it does not appear to be anywhere very common, has an extensive geographical range. I have it from various parts of the Himalayan range, from Fortune's Chinese collection, and from tropical Australia gathered by Bauer; and it is quoted in the Botany of Beechey's voyage from the island of Bonin. The East Siberian and Dahurian *L. juncea*, confounded with it by Roxburgh and De Candolle, is, however, a very different species, with the habit of *L. trichocarpa*, but with narrower though still pointed leaflets, and different calyces; so also the *Hedysarum sericeum*, Thunb., proves to be a distinct species, published by Siebold and Zuccarini under the name of *L. argyrea*. In the *L. cuneata*, as in most of the allied species, the greater number of the flowers, although complete and perfect, are sterile, whilst the numerous pods proceed chiefly from minute flowers without any petals, and reduced to a small calyx, two or three very small imperfect stamens, and an ovary large in proportion to the calyx, covered with hairs, and terminating in a recurved style scarcely so long as the ovary.

17. Lespedeza (Campylotropis) *viatorum*, Champ., sp. n.; erecta? foliolis obovatis retusis glabris vel subtus canescenti-pilosulis, racemis folia æquantibus longioribusve, calycis breviter pedicellati puberuli laciniis lanceolatis tubum æquantibus; alis carina breviter acu-

minata duplo brevioribus, legumine stipitato ovato undique puberulo. —*Rami* tenues, juniores angulati et cano-puberuli, adulti subteretes et glabriusculi. *Petioli* ½–1-pollicares. *Foliolum* terminale sæpius 1–1½-pollicare, lateralia breviora latissima, omnia obtusissima v. retusa, mucrone minimo vel nullo, costa subtus prominente, venis primariis parallelis supra conspicuis. *Racemi* nunc densiflori 1–2-pollicares, nunc longiores laxi. *Bracteæ* minutæ. *Pedicelli* vix semilineam longi. *Flores* omnes completi et fertiles videntur, majusculi (4–4½ lin. longi). *Calyx* 1½ lin. longus, laciniis 2 superioribus plus minus per anthesin connatis, demum sæpe solutis. *Vexillum* late obovatum. *Carina* vexillum æquans, multo brevius rostrata quam in cæteris speciebus hujus sectionis. *Alæ* parvæ et angustæ, basi carinæ adhærentes. *Genitalia* omnino ut in affinibus. *Legumen* stipite lineam longo fultum, 4 lin. longum, plano-compressum, rete venularum inconspicuo, undique pilis brevibus adpressis conspersum, vix ad margines pilosius.

Common about Little Hong-Kong, flowering in August or September, but not found on the Victoria side of the island. It is also in Parkes's Chinese collection, and in Vachell's collection from Macao and the adjacent islands. Fortune gathered another new species,* which at first sight closely resembles this one, but has the pedicels three or four times the length of the calyx, and very different keel-petals, wings, and pod.

18. Neustanthus *phaseoloides* (Benth. in Pl. Jungh.); foliolis ovato-rhombeis acutiusculis sæpe trilobis, bracteolis tubum calycis subæquantibus, calycis dente infimo setaceo-acuminato tubo longiore cæteris brevioribus acutis, alis carinam breviter rostratam superantibus.—*Dolichos phaseoloides*, Roxb., Fl. Ind. vol. iii. p. 316.—*Phaseolus decurrens*, Grah. in Wall. Cat. n. 5612.—*Dolichos viridis*, Ham. in Wall. Cat. n. 5559.

Hong-Kong; a single specimen, without the precise locality.

This species, originally published by Roxburgh, from plants raised in the Calcutta Garden from Chinese seeds, is found either wild (or cultivated?) in several of the eastern districts of India; it was gathered

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* Lespedeza (Campylotropis) *ciliata*; foliolis obovatis retusis glabris v. subtus canescenti-pilosulis, racemis folio longioribus, calycibus longe pedicellatis parvis laciniis setaceo-acuminatis tubum subæquantibus, alis carina angusta longe rostrata paulo brevioribus, legumine stipitato ovato membranaceo reticulato glabriusculo ad margines ciliato.—Hab. China, Fortune, n. 31 and 42.

at Goalpara by Hamilton, in Silhet and in the island of Penang by Wallich's collectors. A full description of the genus and of a Javanese species will be found in the 'Plantæ Junghubnianæ.' The present species is rather more hairy than the *N. Javanicus*, the flowers are rather smaller with a different calyx. The pod is that of *N. Javanicus*, but usually rather more curved, more or less hairy, or nearly smooth.

36004 19. Mucuna (Citta) *Championi*, Benth., sp. n.; foliis novellis utrinque, adultis subtus, ferrugineo-sericeis, racemis brevibus subramosis, calycis pedicello brevioris dentibus superioribus abbreviatis infimo acuminato tubo breviore, legumine oblongo-lineari oblique plicato pleio-(4-)spermo adulto glabro.

Above the Buddhist temple at East Point, climbing over rocks and trees.

Nearly allied to *M. monosperma*, DC., and to *M. anguina*, Wall., it has the flowers very like those of the former species, with the foliage nearer to that of the latter; the inflorescence is, as it were, intermediate between the two. The pod is very different from either, the one on my specimen being four-seeded, about 7 inches long by 2 inches wide, and perfectly free from the stinging hairs of the two other species. The two longitudinal wings along each suture, and the numerous oblique ones across the pod, are 2 to 3 lines broad, stiffly membranous, reticulated, and, like the rest of the pod, black in the dried state.

20. *Phaseolus* sp., apparently new, and belonging to the section *Strophostyles*; but the single specimen, of which the precise locality was not recorded, is not sufficient to describe accurately in so difficult and confused a genus.

21. Atylosia *scarabæoides*, Benth. Plant. Jungh.—*Cantharospermum pauciflorum*, Wall. et Arn. Prod. vol. i. p. 255.

On road-sides in the autumn.

22. Pycnospora *hedysaroides*, Br.—*P. nervosa*, Wall. et Arn. vol. i. p. 197.

Hong-Kong, a single specimen.

23. Rhynchosia *volubilis*, Lour. ?—Hook. et Arn. Bot. Beech. p. 181.

Hong-Kong, a single specimen, without the precise locality.

Although this species, a native of China and the Moluccas, is now generally considered to be Loureiro's plant, it is impossible not to entertain some doubts on the subject, as it has not the rostrate keel upon which Loureiro founded his name and his principal generic character.

It is on this account that Ernst Meyer changed the name of De Candolle's genus to *Copisma*. Yet De Candolle himself saw Loureiro's plant, and considered it without doubt as a congener, and places it next to *R. phaseoloides*, which our plant much resembles.

24. Eriosema *Chinense*, Vog. Leg. Meyen. p. 31.

Victoria Peak, common, flowering in May.

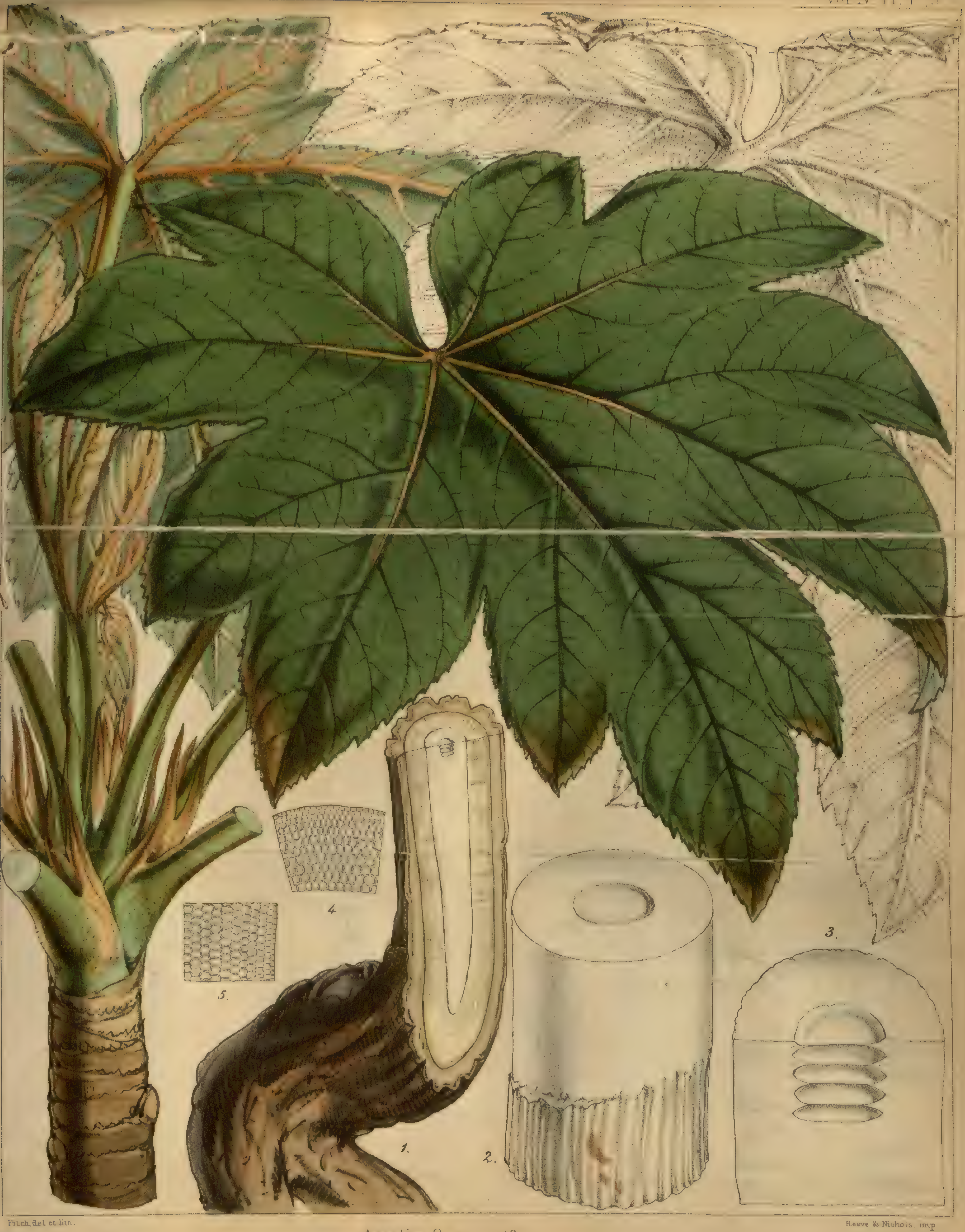
(*To be continued.*)

On the Chinese RICE PAPER; *by* SIR W. J. HOOKER, D.C.L., F.R.A. and L.S.

(TAB. I., II.)

At page 27 of our Second Volume of the 'Kew Garden Miscellany,' we expressed our obligations to Captain Wm. Loring, R.N., of Peartree House, Southampton, as well as to J. H. Layton, Esq., then H. B. M. Consul at Amoy, for several particulars relative to the "Rice-paper," or "Bok-shung" of the Chinese, and we stated that the latter gentleman, so well located for the purpose, on account of the vicinity of Amoy to the island of Formosa, was using his best endeavours to procure the plant which yields this substance. Again, at p. 250 of the same volume, we laid before our readers an account, accompanied by two plates, copied from a well-executed series of drawings by a Chinese artist, kindly given us by C. J. Braine, Esq., late of Hong-Kong, representing the selecting of the seed, the sowing, the full-grown plant, and the various operations in preparing the "paper," to the packing the bales for commerce; and we observed that, well as the drawings were executed, the plant was represented of so strange a character, that no botanist to whom we had shown it could conjecture to what family it belonged. We could only wait patiently for further information. Mr. Layton was unfortunately removed by death from his consulship of Amoy, but his accomplished lady was indefatigable in endeavouring to procure a living rooted plant, and in this she was successful. It was full of healthy foliage when it was put on board for England, but it perished during the voyage. The stem (nearly an inch in thickness and a foot high), with its root, and the fallen and partly decayed leaves, have been sent to me. And here we have made another and important advance towards a correct knowledge of the plant:—a section of the stem shows that it is really

Vol. IV. Pl. I. II.



Fitch, del et lith.

Reeve & Nichols, imp

Aralia ? papyrifera

Rice-paper Plant.

and truly that of the Rice-paper plant: it shows that the drawings above alluded to are a hoax upon Europeans (one of many which these rogues have to account for); and it proves that the drawing referred to at p. 29 of Vol. II., in the possession of John Reeves, Esq., is a faithful one, as far as it goes, of the true plant.

The researches of Mrs. Layton and others all tend to show that the plant is exclusively a native of the island of Formosa. "As far as I could learn," this lady says, "it is only really known to grow in the deep swampy forests of the north of Formosa, though said in books to be found, in these later years, in one other part of China and formerly in many. One thing is certain, that all the *Rice-paper* met with in Fokien and the south is pith from the island Hu-nan, or Ho-nan (as the Amoy people call it),—Formosa. The tree must grow there to a good size, for I was again and again informed I could not well have a '*tree*' brought over, as it would be too large to manage on the way. Great danger and risk attend the men who go into the forests to procure the stems, where the aborigines come suddenly upon them and take away their lives: so that it is customary to have a guard of soldiers on the occasion. At one time it seemed quite certain that my efforts to procure a plant would have been supported by all the mandarin force on that part of the island, for the late brave old Chinese admiral at Amoy took the matter in hand for me, and sent orders for one to be obtained, and sent back in one of the imperial junks employed to take troops to Formosa; but before it could reach me he was dead. I did not, myself, bring home with me the dead and withered specimen you received, for it did not reach Amoy in time: but I had arranged with a friend to take charge of it, who unfortunately forwarded it to me by way of the Cape instead of sending it overland: for, indeed, it had already been several months in the case in China. One of the two Chinamen, whom I had long before sent over in a junk for the purpose, returned with a small root when I was too ill to take care of it; but it had several green leaves when I took it with me on board ship for England, and this was I think entirely killed by the brown ants. The man who obtained this, assured me that the 'large tree' he procured had died while he waited for a junk, and then after putting out to sea, and being driven back by pirates, he threw the plant overboard, reserving a portion of the stem and some leaves, which I have now in my possession. The second messenger returned soon after my departure, bringing a fine strong plant, thriving beautifully when it was put on board the ship Bentinck, but which died on its passage, and reached your hands without any signs of life."

The fate of this plant is further narrated in a letter dated Hong-Kong, September 1st, 1850, addressed by J. O. Bowring, Esq., to his friend Major Champion, who favoured me with a sight of it.

"Hong-Kong, September 1st, 1851.

"I must write a line to let you know that specimens of the '*Rice-paper* plant,' root, leaf, and stems, are going home by this mail to Sir W. J. Hooker. They were procured by Mr. C. S. Compton, the brother of our Compton, from the crew of a Formosa junk (which was wrecked) who were picked up by the vessel in which he was a passenger,—at least, I believe so. Compton showed me a leaf of the plant. It seemed like a good-sized Sycamore leaf, very downy on the underside; but it was so shrivelled up, that it was scarcely possible to say what it was; and being the only one he had left, Compton would not let me steep it in hot water. I saw a small root also, a curious-looking thing, apparently of a marsh or water-loving plant, the pith running down to the very end. It seemed to be jointed and was furnished with fibres at certain distances. Compton has magnificent specimens of the pith, as long as my arm and as thick as my wrist. . . . . It is quite certain now that it is a production of Formosa, whence large quantities are brought over in native craft to Chinchew, where it is cut into thin sheets for the manufacture of artificial flowers, its principal use. It must occur in great plenty, as it is a *very* cheap article there. Compton has given me a beautiful piece of the pith, cleaned and prepared for cutting into sheets. It is as white as snow, about 3¼ inches long, and a solid cylinder of rather more than an inch in diameter. An incision has been made down to the centre, or nearly so, through the whole length; so that this piece would furnish several sheets 3¼ inches square. From the size of some of the sheets we see, it is evident that the pith, after being cleaned and prepared, must sometimes measure more than 2 or even 2½ inches in diameter: so that the gigantic size of the plant, as represented in the Chinese drawing which Sir W. Hooker copied in his Journal, may not be out of nature. As we have an opium vessel stationed in the Chinchew River, I shall make a strong effort to get some living plants through our schroffs. The name of the place from which the wrecked men said it came, is Chick-Cham-fan, in the district of Cheong-fa, in

Formosa, according to the Canton pronunciation, or Chuh-tseen-fun in Chang-hwa in the Mandarin dialect."

We have further been favoured with a sight of the specimens of the stem and leaves* above alluded to, as brought from Formosa by the first messenger sent by Mrs. Layton; and these differ in no respect from our plant, except that the leaves are more carefully preserved, and that the stem is three feet two inches long, and not an entire stem (possibly a branch), filled from beginning to end with the beautifully white medullary substance, from which the *rice-paper* is cut, and which occupies a very much larger portion than the pith of our common Elder does.

The principal of our figures (Tab. I. II.) is copied from the drawing, before alluded to, in the possession of John Reeves, Esq., of Clapham, (verified by our own dry specimens) and was made many years ago from a living plant then in his garden in China; which plant was sent (and arrived alive) to Dr. Lindley at the Horticultural Society: but it soon died. Mr. Reeves further received, and they are now before us, the knife, a tile, and two squared pieces of wood, used, as was understood, in the several processes of preparing the paper and cutting it into particular sizes.

We are now, thanks to Mrs. Layton, so far advanced in our knowledge of this plant, as to be able to form a correct notion of its affinities. We believe that Dr. Lindley has already expressed an opinion, from the imperfect specimen he had seen, that it was either Umbelliferous or Araliaceous. We have little hesitation in deciding in favour of the latter family, nor do we think we can be far wrong in referring it to *Aralia* itself. The species of that genus possess the same habit or external characteristics: a more less woody stem, bearing its leaves at the apex, or at that of the branches, similar large leaves, not unfrequently palmated, and sometimes, especially while young, clothed with the same dense stellated pubescence as in our plant: the petioles are often very long, and furnished near the base with two large, more or less adnate, subulate stipules. I would suggest for it the name of

ARALIA? PAPYRIFERA, *Hook.*

Caule inermi erecto suffruticoso striato annulato intus copiose albissimo-medulloso, foliis terminalibus longe petiolatis amplis palmatim

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* These were brought home by Mrs. Layton for Captain Wm. Loring, and that gentleman has kindly desired that they should be deposited in the Museum of the Royal Gardens of Kew.

5-lobis subtus præcipue (junioribus totis) stellato-subferrugineo-tomentosis, lobis lateralibus bilobis terminali trilobo, omnibus acutis serratis, petiolo basi stipulis 2 magnis subulatis. (TAB. I., II.)

HAB. Swampy ground in the northern parts of the island of Formosa.

The flowers and fruit are yet unknown to us. And with regard to the plant itself, we know very little more than what the figures exhibit. Our principal figure is copied from Mr. Reeves's Chinese drawing, the fidelity of which we have tested by comparison with our dried specimens. The root is thick and fusiform, slightly divided, equally woody with the stem. Our representation of that is taken from the lower part of our dead plant, cut through transversely and vertically. Our larger stem above mentioned exhibits exactly the same characters: it is striated or furrowed, and marked with numerous rings, the scars whence leaves have fallen. A section exhibits a moderately thick bark, a thicker circle of pale wood, within the tube is occupied by the white pith descending almost into the root. In the thicker stems, the pith easily separates from the wood, but with a rather rusty-coloured furrowed coat, which seems to take this latter character from so many ridges on the inside of the wood. It is this pith, freed from the external surface, which a Chinaman is represented in the act of cutting into paper, in our Vol. II. Tab. IX. Among our numerous samples of the pith (thus prepared and cut into perfect cylinders) some are uniform (or solid, if I may use the term), while others are furnished with cavities divided into compartments by entire, or more or less ragged septa. These cavities, when present, must diminish the size of the paper in a given cylinder of pith. Fig. 2 shows a septum in the transverse section; and fig. 3, cavities and septa in a longitudinal section. Fig. 4 and 5 are magnified, 4 being a transverse section, and 5 a longitudinal section, of this delicate cellular substance.

Notice of a new species of DEPARIA, *discovered by* MR. CHARLES MOORE, *in New Caledonia.*

(TAB. III.)

Captain Erskine, of H.M.S. Havana, was so kind as to invite Mr. Moore, the active Curator of the Government Botanical Garden at Sydney, to accompany him on a voyage to New Caledonia, and to give him every facility for collecting plants,—and we know how much is in

Fitch del et lith.

Reeve & Nichols imp.

the power of naval officers on these occasions;—and well has Mr. Moore rewarded Captain Erskine's generosity, by the discovery of several perfectly new and very interesting plants in that and some of the adjacent islands. Besides the magnificent *Araucaria Cookii* (Brown, MSS.), of which a figure will soon appear in the 'Botanical Magazine,' three apparently new species of *Dammara*, and some new Ferns, have been the result of this voyage. We have reason to believe that Mr. Moore is preparing some account of the voyage in reference to the plants he detected; but we trust to have his permission on the present occasion to dedicate one of the most remarkable of his Ferns to him, which he so well merits. It is a *Deparia* with *reticulated* fronds. I am well aware that this is a character that in the minds of some very able botanists would entitle the plant to constitute a new genus: but this is not, we have already had occasion to declare, our view of the importance of such a structure, if it be not accompanied by any other confirmatory character in the plant. As a subgenus or section it may conveniently be employed; and as the original species, *D. prolifera*, Hook., and *Mathewsii*, Hook., with their free veins, may be called *Eudeparia*, the section with reticulated fronds may be called *Trichiocarpa*, from the resemblance the stipitate sori bear to some species of *Trichia*.

Deparia (§ Trichiocarpa) *Moorii*; fronde deltoideo-cordata reticulata bipinnata, pinnis lanceolatis acuminatis pinnatifidis laciniis acuminatis margine utrinque copiose soriferis, involucris stipitatis.

HAB. On the ground in a dense wood, south side, Copenhagen River, New Caledonia. *Mr. Charles Moore*, n. 14.

Frond stipitate (*stipes* slender, dark purple, glossy), 1 foot to 1½ foot long, in outline between cordate and triangular, divided in our finest specimen into seven primary *pinnæ*, which are rather distant; the two lower pinnæ are again, near the rachis, pinnated; the next pair can scarcely be said to be more than pinnatifid; and the terminal pinna, equalling one-half the length of the frond, is broadly ovate-lanceolate, decurrent at the base, deeply pinnatifid, cut in its lower half into long lanceolate pinnatifid segments, the upper segments gradually become shorter till they disappear in the acuminated point: segments always acuminated. All the lowermost pinnæ and segments are lanceolate and pinnatifid; the pinnæ bearing the closely-placed sori on very narrow teeth (*pedicels* they may be called) on both margins. The *texture* is membranous, the *colour* dark olive, the veins everywhere reticulated with oblong areolæ, the *areolæ* next the costa, or principal midrib, being the longer and largest, and bounded by an arcuate veinlet. *Involucre* forming a shallow cup at the apex of small stalks, stipitate, and opening outwardly, filled with long-pedicellated capsules, exactly as in *D. prolifera.* These stipitate involucres filled with capsules have much the appearance of some species of *Trichia* among the *Fungi.*

Fig. 1. Portion of a frond with sori:—*magnified.*

BOTANICAL INFORMATION.

Letter from PROFESSOR PARLATORE *to* MR. P. B. WEBB, *on his Journey in Scandinavia and Lapland.*

Florence, November 25, 1851.

I left Florence on the 3rd of May, and remained a few days at Milan: from thence on the fourth day I reached Berlin. I was desirous of consulting Humboldt and Von Buch on my projected voyage, and I cannot express to you the extreme kindness I experienced, particularly from the former of these eminent men. Humboldt gave me a magnificent introduction to the King of Sweden, which secured me not only a special reception from His Majesty, but likewise most useful letters in his name to all the authorities throughout Sweden and Norway.

From Berlin I continued my journey to Hamburg, where, as at Berlin, I made a few botanical excursions; and then proceeded by land through Holstein and Schleswig, and so through the islands of Fionia and Zealand to Copenhagen. Here I saw Schouw, suffering unluckily from headaches, and Liebmann, with whom I likewise made several excursions. I now embarked for Gothenburg, where I made the acquaintance of Lindeberg, and thence passing across the Venern and Vettern Lakes and through the Gotha Canal I reached Stockholm. Here, as at Copenhagen, I remained a whole week, and explored the environs botanically. I became acquainted with Andersen, Wahlberg, Wickström, and Thedenius. The first of these has sailed in a Swedish corvette for a voyage round the world. From Stockholm I reached Upsal, where it was a great pleasure to me to meet with Fries and Areschoug, who received me, as wherever I went I was received, most cordially. I herborized at Upsal, and thence betook myself to Dannemora, where are the celebrated iron mines, and then went on to Gefle, botanizing everywhere as I went. The district between Upsal and Gefle presents unusual interest, as, besides the Oak, many other plants of the middle regions of Europe have here their northern limit.

Beyond Gefle there are vast marshes filled with *Betula nana*, *Ledum palustre* (found likewise at Berlin), several *Carices*, *Andromeda polifolia*, &c., and clothed with interminable forests of *Pinus sylvestris* and *Abies excelsa*, which cover the plains of Gestricia, Elsingia, Angermannia, Western Bothnia, and Northern Bothnia, countries which I traversed by land, everywhere making excursions, and collecting every plant I saw, from *Capsella Bursa-pastoris* upwards. I mounted the Sculaberg, where, like Linnæus, I nearly lost my life in climbing up to the caverns near its summit. My principal halts were at Umeö and at Skeleftiö, of which the temperatures are known, or at least I shall be able to make them known. At Skeleftiö I gathered for the first time the *Ranunculus Lapponicus*, and the rare and lovely *Calypso borealis*, *Splacknum luteum* and *rubrum*, &c. During my journey from Gefle to Umeö I was overturned and thrown off the road, together with the horse and the horrid cart without springs, in which I travelled. The lacerations and contusions I received from this fall I could have borne, but I was sorely grieved when I found that both my barometers were broken.

At length, by Piteo, Luleo, and Hoita, I reached Staparanda and Torneo, where I remained two days to investigate the botany of the neighbourhood. From Torneo I now penetrated into the interior of Lapland, navigating the rivers in a boat or more frequently travelling on foot, on account of the continual rapids and falls with which they are beset, and worked my way as I could through pestiferous marshes infested by millions of most insupportable and ravenous insects, which, throughout the whole of my journey in Lapland, caused the most indescribable torment, and which, notwithstanding gloves, a veil, and a handkerchief round my head, put me into a fever of desperation.

I now crossed the polar circle, collecting with undiminished zeal every plant that fell in my way. At Pajala, near Kengis, I visited the curate Lestadius, for whom our excellent friend Mr. Gay had given me a letter. He received me obligingly, and showed me some of his plants.

From the river Torneo I passed into the province of Muonio, and found myself in Russian Lapland, passing by Muonioniska, Karesuando, and Tubateky. Thence I penetrated into the midst of the deserts, suffering greatly from the cold, and deprived of food, or nearly so, for the plentiful supplies which I had brought with me from Stockholm had been entirely spoilt by the continual and copious rains and storms. I was in want even of bread,—exposed too, as I was, day and night to the open air without a bed, without a roof. Ah! my good friend, it is impossible for you to imagine the wretched plight I was in, the cruel privations I suffered!

Not being able to continue my journey by this route, on account of the vast and deep marshes which extend towards Alten, I determined to find my way thither by the Alps. This, however, was still worse, for I had to wade across wide and impetuous torrents, often at the peril of my life. How I survived all this I know not. At last, after a dreadful journey, I descended into Finmark, and reached Hatten, on the Gulf of Lyngen. I was in a shocking state, fatigued beyond description, attenuated from the want of food, and my strength entirely gone. I had walked and walked, and botanized, with my cold and wet clothes continually upon me day and night, without either shelter or fire; for these inclement Alps produce neither trees nor even brushwood, to make a fire.

At Lyngen I found a merchant who most hospitably received both myself and my suite. Oh! how delightful is hot soup and a roof over head, after such sufferings! But I had no time to lose; I visited the lofty Alps covered with snow and ice which rise above town. Thence I followed the shores of the gulf, where I met with whales for the first time, and arrived at Haonees and Maursund, whose Alps I likewise visited. Thence I wended my way to Löppen, to Talvig, Kaafiord, Bossekop, and finally to Hammerfest. Here I embarked for the North Cape; but though I passed the extreme point of Europe, the winds and the waves were so high and so contrary, that notwithstanding the few miles that remained before me, it was impossible for me to reach it.

With regret I sailed back to Hammerfest, where I remained seventeen days, in order to explore thoroughly the vegetation of the island of Qualoe, on which the town is built. I found upon it 400 species, of which 200 were Phanerogamous and 200 Cryptogamous; and of these latter, 110 were Mosses. I shall likewise be able to give the temperature of Hammerfest, and details respecting its climate—thanks to an intelligent merchant residing there, who communicated to me his meteorological observations made regularly during five years.

From thence I returned to Alten, and from Alten to Tromsoe, to visit the lofty Alps of Tromsdeltia. I then went over to the islands of Loffoden, passing the dreaded Westfiord. After stopping at Bodoe I followed the western coast of Norway till I reached Trondjem. I herborized around Trondjem as I had done round Bodoe, and visited the Dovrefield, where I stayed several days, and made an ample harvest of plants. Thence I had just descended into the plain of Nissen, when I was seized with paralysis. Fortunately all my excursions were finished; I was no longer amongst the wilds of Lapland, but where medicines and medical aid were at hand. I will not stop to tell you all my sufferings during forty miserable days of illness, nor afflict you by complaining. What I most dreaded was the obstruction of the Gulf of Christiania by frost, and the impossibility of getting away. However, by the blessing of God, I was well enough to embark on the 4th of October, and reached this on the 4th of November.

[We are happy to be able to add that Professor Parlatore's health is daily improving. He is finishing his interesting memoir, begun before his departure, on the Egyptian (or rather Nubian) and the Sicilian Papyrus, which he finds to be two distinct species, and he will shortly recommence the publication of the 'Flora Italiana.']

Notes on the Botany of the CAPE DE VERD ISLANDS; *extracted from a letter of* DR. C. BOLLE *to* William Willson Saunders, Esq., *dated*

Santa Cruz de Ténériffe, Nov. 10, 1851.

The Cape de Verd Islands, on one of which I established my headquarters, are singularly cut off from communication with the continents of either world, and from one another. There is no regular post to this groupe, and but little intercourse is carried on among them. From the island of St. Nicholas, where my time was chiefly spent, to St. Vincent, at which the steamer touches, the distance, as to time, is as great as to England! I lived in a most sequestered way for several months, and chiefly regretted it because of the difficulty of sending plants to you, for I could have made many valuable additions to your garden and greenhouse if I had been able to transmit the cases so as to suit the arrival of the steam-ship. Certainly the Gorgades of the ancients are among the most picturesque spots in the world, and their deep and closely-shut valleys, watered by narrow streams, presented to my delighted eyes all the riches of a tropical vegetation. But everywhere the sea-coast is one sandy desert, partially and scantily decked, during the few weeks of rainy season, with transient verdure, chiefly consisting of Grasses and a few Leguminous plants of small dimensions. The more elevated situations assume somewhat of the character of the Canary Islands in their flora; but the species are neither numerous nor showy. Many of the natural families have but one representative: such is the case with the *Geraniaceæ*, *Amaryllideæ*, and *Lycopodiaceæ*. A single *Allium*, which, growing near gardens, was probably introduced, is the only bulbous plant which I discovered. There are no forests: either they never existed, or the imprudence of the inhabitants or the ravages caused by goats have destroyed them. The *Euphorbia Tuckeyana* grows by thousands, to the exclusion of almost every other shrub on the mountains, which it covers with a dwarfed coppice; while here and there some Gum Dragon-trees adorn the crest of a lofty rock; and the sea-beach, near the mouths of torrents, produces the *Tamarix Senegalensis*. Add to these the *Jatropha Curcas* and the Wild Fig-tree (*Ficus Lichtensteinii*), and you have the entire catalogue of the *Dendrologia* of the Cape de Verd Islands. *Acacia Arabica* and *Dichrostachys nutans* are nothing better than bushes.

I might go on in the same strain, and prove to you how hard a stepmother Dame Nature has been to this Archipelago; but I will only say that if my voyage had been connected with any views of pecuniary remuneration, it would have been an utter failure; but as this was not the case, I do not regret the time I spent at St. Nicholas and St. Vincent. I was cheered by much kindness received at the hands of excellent people, and I enjoyed perfect health. The herbarium which I collected will enable me to add many species to those previously known. Still, considering the paucity of the flora, the extreme drought of the year, the short-lived character of the vegetation, and the scourges of fever and famine, which are perennial visitants of the Cape de Verd Islands, I determined on shortening my visit to them. Ten years would be required to investigate thoroughly the natural history of the groupe; for the brief season of the annual rains is but too little to enable the botanist to explore each island; and there are ten! It is highly probable that there is little variety in their productions. St. Nicholas, which was the chief scene of my labours, is the largest, loftiest, and most fertile in the groupe: no opportunity of going to Fayo was ever presented, and St. Jago and St. Antonio were then suffering from pestilence; while, at St. Vincent, where a flourishing town will probably soon arise, at one of the finest ports of the Atlantic, there was hardly the possibility of remaining, for want of accommodation and provisions. Mr. Kendall, the British consul, was occupying a miserable hut, his own house having been destroyed by a hurricane; and I was compelled to pay a dollar a night, for permission to shelter myself in the cottage of a negro, where there was no bed.

And now to refer to the plants which I sent you: the most interesting is the *Sarcostemma Daltoni* (Decaisne) which is a long-stalked, pendent, leafless *Asclepiadea*, graced, in the months of August and September, with innumerable branches of pale yellow flowers. It is a rooting species, easy of culture and increase, and it requires much sun and heat and almost no moisture. It forms the chief characteristic of the littoral vegetation, where the coast is dry, burning, and African in aspect, and adorns the rocks with its thick garlands. Then comes a Crassulaceous plant, with rosettes of large glaucous leaves and yellow blossoms: it is a native of the mountainous region, and consequently must receive less warmth and rather more water than the *Sarcostemma*. A *Nephrodium*, with tuberous roots, is pretty and certainly new; *Asplenium Canariense*, *Notochlæna Marantæ*, *Davallia Canariensis*, and an *Aspidium* (I think *odoratum*) with large silky rhizomes, must be kept rather dry. There is a scrap of the wild *Aloe* of the Islands, some roots of a little-known Umbelliferous plant, which seems to be the *Tetrapleura insularis* of Parlatore, and four small specimens of *Euphorbia Tuckeyana*, which have little chance, it is to be feared, of surviving the voyage; bulbs of an *Umbilicus*, probably *horizontalis*; and seeds of *Poinciana pulcherrima*, and of a lovely *Cassia*; last, not least, tubers of the only *Orchidea* of St. Nicholas, which I could never detect in flower or seed, its season of inflorescence being perhaps the spring; it requires shade and moderate warmth, and is doubtless new: I shall enjoy to see it bloom with you.

In order to gratify you, I have charged my conscience with the murder of some of the few Dryads of the Cape de Verds:—they are so small in stature that you will pronounce them quite elfin! The next steamer shall convey to you samples of the woods of *Dracæna Draco*, *Euphorbia Tuckeyana*, *Tamarix Senegalensis*, *Acacia Arabica*, *Dichrostachys nutans*, *Ficus Lichtensteinii*, &c., also some packets of seeds. The whole, however, is so trifling, that I am almost ashamed to offer it.

From the Cape de Verd Islands I came to this place, and hoped to spend part of the winter amid its southern scenery, where noble woods and your favourite succulents abound. M. Berthelot, one of the kindest of men, promises to direct my excursions, and assures me that I shall visit valleys hitherto untrodden by the foot of any naturalist. Armed with your saw and accompanied by one man, I shall explore the Laurel groves of Ténériffe. I can hardly suppose that all the succulent plants which grow here have found their way into European gardens; and this island is also rich in *Liliaceæ*, in species of *Scilla* and *Asphodelus*. There are also several kinds of land shells, of which I could see but three species in the Cape de Verd Islands, and a single fluviatile shell.

On the increase of temperature in the Flowers of VICTORIA REGIA. *Translated from the 'Neue allgemeine deutsche Garten- und Blumenzeitung'* (New German Garden and Flower Gazette, by EDWARD OTTO, Curator of the Botanic Garden at Hamburg). Part II. of 7th year, 1851.

At the request of Professor Lehmann, who thought he had formerly noticed an increase of temperature in the flowers of *Nymphæa alba* at the moment of opening, as compared with that of the surrounding atmosphere, we made experiments in this garden (the Hamburg Botanical Garden) with the *Victoria regia* on the 24th of September last (1851), which produced the following striking results.

The temperature in the hothouse being 17¼° Réaum., and that of the tank being 16½° Réaum., the thermometer on being plunged into the flower at the moment of expanding its anthers, at 7h. 11min. p.m., rose to 21½° Réaum., the bulb being placed among the anthers. On being sunk into the blossom below the anthers, a decrease of temperature took place gradually.

In thus preliminarily noticing the above fact, we deem it proper to say, that owing to the number of visitors who crowded to see the plant in flower, it was impracticable to pursue the experiment any further. It was made on the fourth flower that had opened. On a subsequent occasion, another flower produced the following result:—Temperature of the surrounding air 18° Réaum., of the water $16\frac{3}{4}$° Réaum.; at the time the thermometer was sunk into the flower, it showed exactly $16\frac{1}{2}$°, and in the course of fifteen minutes it rose in the flower to $32\frac{1}{2}$° Réaum.

One of the largest leaves ($5\frac{1}{2}$ feet in diameter, with an erect margin of two inches) has confirmed the test of not only supporting a strong boy, five years and four months old, but on another trial it sustained a weight of one hundred pounds, a thin piece of wood three feet broad being previously placed across the leaf.

[Kindly communicated by Professor Lehmann at our request.—*N. Wallich.*]

NOTICES OF BOOKS.

Popular History of BRITISH FERNS *and the allied Plants, comprising the Club-mosses, Pepperworts, and Horsetails; by* THOMAS MOORE, F.L.S., &c. London: Reeve and Benham.

We have spoken favourably in our Journal of Mr. Moore's 'Handbook of British Ferns,' intended as a guide and companion in Fern-culture; a work, as its title expressly indicates, more immediately bearing on the cultivation of British Ferns, with neat woodcuts. The present is a popular, yet not unscientific, history of all known British Ferns, using the word *Ferns* in the ordinary acceptation of the term, *Filices* of Linnæus; and certainly we have rarely, if ever, seen a publication relating to plants where the object aimed at is more fully accomplished than in the elegant volume now before us. It is quite true that much of its charm may arise from the well-arranged and well-executed and coloured plates, fresh from the hands of Mr. Fitch. But we are equally bound to say that the descriptive matter is got up with good taste and good feeling too. There is not that desire to multiply species upon the slightest variation in form, or excess or diminution of pubescence, or scales, colour, &c., which is characteristic of the writings of so many authors who confine their studies to a partial view of any particular kingdom of nature, a single family, for example, and especially of the family of one particular district of country. He does not go the whole length of species-making, nor does he quarrel with others who differ from him; and it is easy to foresee that such a line of conduct is eminently calculated to recommend the already, we believe, popular subject of *British Ferns*.

We do not approve of the author's arrangement of the descriptive matter, or diagnoses, in *alphabetical* order: the genera according to the letters of the alphabet, and the species also. We do not see why all these should not have come under their respective generic and specific *characters* at page 43 and following pages, and at page 49. If, indeed, they were arranged under any very familiar or popular names, it might be of some advantage thus to be referred to a good description and the scientific name: but as this is not the case, and as a student must know the modern scientific name before he can find the description, we see no reason for such an arrangement. The same objection holds good in the figures; for though we have spoken favourably of their disposition on the plates, that alludes to the artistic effect, and the clever manner in which a great deal is introduced into a small compass, even of the larger genera and species. *Pilularia* and *Pteris* appear on the same plate because they begin with P; and, consequently, in the descriptive matter there is the same unscientific arrangement, which might easily have been avoided. We trust this arrangement will be changed in a new edition, which cannot fail to be soon called for.

SEEMANN, BERTHOLD: *Die in Europa eingeführten* ACACIEN, *mit Berücksichtigung der gärtnerischen Namen.* 8vo, with two plates. Hanover, 1852.

This well got-up little work is unfortunately written entirely in the German language, and, therefore, only intended for German cultivators. It distinguishes 148 species of *Acacia* that are known in European gardens, of which 109 belong to § PHYLLODINEÆ, 9 to BOTRYCEPHALÆ, 10 to PULCHELLÆ, 12 to GUMMIFERÆ, 7 to VULGARES, and 1 to FILICINÆ. The beauty and fragrance of many of the species of the genus, the gracefulness of the foliage, or the peculiar forms of the phyllodia, and the ease with which they are cultivated in a temperate house, and especially the early period of the appearance of the blossoms, all conspire to render these plants eminently deserving of the attention of horticulturists. The work is appropriately dedicated to Mr. Wendland, the able Inspector of the Royal Gardens at Herrenhausen, who was himself one of the first to direct attention to these plants, and to publish excellent figures and descriptions of New Holland species. The two plates, not particularly well executed, are coloured, and consist of *A. bossiæoides*, All. Cunn., and *A. rostellifera*, Benth.

Professor C. F. P. VON MARTIUS'S *Eloge on* Ledebour, *delivered at the public meeting of the Royal Academy of Sciences at Munich, held on the 27th November,* 1851. *Translated from* Gelehrte Anzeigen *of that Academy of January* 2, 1852, *by* N. WALLICH, M.D., F.R.S., V.P.L.S.

Charles Frederick von Ledebour, Russian Councillor of State, and Professor Emeritus at the University of Dorpat, was many years domiciled in Munich, participating in the labours of the mathematical and physical class of this academy as foreign member. He was descended from an ancient Pomeranian family, and was born on the 8th of July, 1785, at Stralsund, in which garrison his father was stationed in the capacity of Swedish Judge-Advocate-General, but died a few weeks before that event took place. As a young man Ledebour devoted himself to the natural bent of his mind, pursuing mathematical studies with such zeal, that he was enabled, so early as his fifteenth year, to enter the University of Grifswald, where the celebrated physiologist Charles Asmund Rudolphi became his paternal instructor and guide. His juridical studies soon yielded to his natural propensity towards those of mathematics and natural sciences. In the course of some years he went to the Swedish metropolis, in order to undergo the public examination in mathematics and practical geometry; and it was there, that his intercourse with the two celebrated disciples of Linneus, Thunberg and Olaf Swartz, and a journey to the northern Norwegian frontier mountains, undertaken in company with some mining officers, determined the choice of his future career. He returned to Grifswald with a commission as an officer, and with prospects of employment in practical geometry; but yielding to his patron Rudolphi's urgent recommendation, to apply for the post he was about to vacate at the University, Ledebour presented himself on the third day of his arrival for medical examination; wrote his inaugural treatise, *Dissertatio botanica, sistens Plantarum Domingensium Decadem;* and thus he became demonstrator on botany, and director of the Botanic Garden at Grifswald, at the early age of twenty years.

Being called to the University of Dorpat, as professor of natural history, and especially botany, Ledebour proceeded for some time to Berlin in 1811, where Willdenow and Pallas, the greatest naturalist who ever entered Russia from Germany, kindled in him extensive plans for elucidating the natural history of that mighty empire. It was not, however, without personal danger, that he reached the place of his destination, as Prussia was preparing for a bloody contest; and he was therefore compelled, in order to avoid the hostile armies, to brave a stormy sea in an open fishing boat, from Danzig to Königsberg.

At Dorpat our colleague began his multifarious and eventful activity as teacher, observer, and author. He made the phytography of Russia the scientific problem of his existence; and with such successful energy, that the literary history of our times must always consider him as the great leader in the flora of that empire. Through him and his colleague in the Imperial Garden at St. Petersburg, the Councillor of State von Fischer, the botanists of the West owe their chief acquaintance with the botany of those eastern regions; by his intense and critical zeal the Dorpat garden became the depository for their widely scattered plants; and from thence, as well as the garden at St.Petersburg, the novel forms of the Caucasian and Siberian vegetation were distributed among similar institutions in other parts of Europe, in order to be more closely examined.

In 1826 Ledebour made a scientific voyage to the Altai; and a journey in winter, of five weeks' duration, brought him to the distant Barnaul, the chief town in the great district of Siberian foundries, where the widely-spread treasures of native gold attract vast numbers of adventurers, as do those of California and Australia. On the approach of spring he extended his researches from thence into the mountains, as far as the Chinese frontiers, while his zealous pupil, the Councillor of State and Academician, Charles Anton Meyer, examined the Kirgisian wilds west of Altai, and von Bunge, now his successor in the chair of Dorpat, visited its eastern parts. The harvest derived from these expeditions, and the iconographical and descriptive works which Ledebour published, partly at the charge of the Imperial Russian Government[*], form an epoch in the descriptive systematic and geographical botany of the Russian Flora, for which the two Gmelins[†], Messerschmied, Marschall von Bieberstein, Fischer, and others, as well as many among the pupils of our colleague, had prepared the materials. The last production of his comprehensive mind was a general critical flora of the Russian dominions, arranged according to phyto-geographical provinces, and with such a degree of devotion did he pursue this arduous undertaking, that his ebbing life only yielded to his manly energies of mind, until the completion of his manuscript enabled him to lay down his weary pen; but the monument thus reared to him, as a botanist and plant-geographer, will secure to Ledebour a grateful place in the history of the science.

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[*] *Icones Plantarum novarum vel imperfecte cognitarum, Floram Rossicam imprimis Altaicam illustrantes;* 5 vols. fol., Riga, 1829–34. Next, *Flora Altaica;* 4 vols. 8vo, Berlin, 1829–33; and finally, *Flora Rossica, sive Enumeratio Plantarum in totius imperii Rossici provinciis Europæis, Asiaticis et Americanis, hucusque observatarum*, Stuttgard, 1842–51.

[†] Ledebour has added a copious commentary to J. G. Gmelin's 'Flora Sibirica,' in memoirs of the Royal Botanic Society of Ratisbon, vol. iii., 1841, pp. 43–138.

Becoming Emeritus in 1836, he took to a milder climate, first at Odessa, and next at Heidelberg. Thence he removed eight years ago to Munich, where he settled, and brought his noble labours to a conclusion a few days only before his death, which happened on the 4th July, 1851, in consequence of a lengthened attack of disease in the heart.

His 'Journey to the Altai' (Berlin, 1829, 2 vols. 8vo) demonstrates, among his other works, how very amply his mind was stored; it is a treasury of valuable information in matters of geography, geognosy, botany, ethnography, and statistics. As regards botany, he belonged to the reformed Linnean school, which, by its penetrating, systematic inquiries, and the precision of its description of natural objects, appears, as it were, to possess a geometrical character. To attain a classical skill in exhibiting an object by this method, requires an unconditional devotion to that object in all its systematical connection. It may therefore be said, in praise of our distinguished systematist, that he has always remained steady in one direction of a science, which has of late diverged into many paths, having once chosen that direction for his pursuit. And this was in harmony with his clear, considerate, and steady views in all relations of life, which, with the eminently strict rectitude of his honourable character, and his affability in private life, endeared Ledebour indelibly in the memory of those who enjoyed the privilege of coming within his sphere of activity.

On the Camphor-tree of Sumatra (Dryobalanops Camphora, *Colebr.*); *by* DR. W. H. DE VRIESE, Professor of Botany at the Royal University of Leyden. (*Kindly translated from the Dutch by* MISS MARY ANNE DE VRIESE, *for this Journal.*)

(*Continued from p.* 41.)

Geographical Distribution.—The region in which the Camphor-tree is found extends, in latitude, from Ajer Bangis to Singkel, or nearly from 1° 10′ to 2° 20′ N. It is not met with more southward than Ajer Bangis; whether it grows further north than Singkel is unknown (Jungh.). Within these parallels it extends along the south-western side of Sumatra, from the coast to a considerable distance in the interior, and is found on the mountains as high as from a thousand to twelve hundred feet. As those mountain-chains which are near the coast, and most of the central valleys of the mountains which extend parallel to the coast, that is, in a direction from S. W. to N. E., are much higher than 1000 feet, it is clear that this tree has a very limited region, occupying but a small part of south-western Sumatra: it is also confined to the outer slope of the mountains, whence it descends into the alluvial plains, though it approaches the sea only in those parts where the ground is not swampy. It is found most abundantly, and in the best state, on the outlying hills of the mountain-chain and on the lower slopes of the mountains themselves, at a height of from three to five hundred feet; and here the camphor is collected in the greatest quantity.

The Camphor-tree was seen by Dr. Junghuhn on the promontory of Caracara, near Telo; on the alluvial plain of Loemoet; on the mountains of Hoeraba, behind Sibogha; and on the ridges of hills in the south of Loemoet, &c. He found it growing on weather-beaten granitic and trachytic hills, on yellow-red clayey soil, abundantly furnished with oxide of iron, and also on a rich alluvial soil abounding with humus.

Climate and Temperature of the region of the Camphor-tree.—On the coasts the mean annual temperature is but 80½° (on the island of Java 82°) and nearly 78° Fahr. at 1000 feet, the most elevated limits where the tree is still found, thus much lower than in Java.

There are two causes particularly, that bring about this depression of temperature: first, the narrowness of the level shore of the coast, immediately at the foot of high mountains; secondly, the uninterrupted dense forests, with which not only the mountain-chain itself, but the coast-plain, is covered. These circumstances produce a greater humidity, and at the same time a greater coolness of the air, at an inferior elevation than in Java.

At the eastern foot of the Sumatra mountain-chain, there are extensive arid and barren plains, only overgrown with Alang-alang (*e. g.*, at Pertibi). Over the heated soil of these plains the air becomes extraordinarily rarefied: the cooler sea-air rushes in, coming from the ocean on the western side of Sumatra, where the sea is deep, and where no land exists for a great distance; and a west wind arises, which, partly kept back by the obliquely situated mountain-chains, changes into a north-western one. This wind carrries the humidity of the sea towards the mountains, by the summits of which the moisture is soon condensed and changed into clouds. These, during the whole year, at intervals almost daily, at regular hours, but chiefly in the afternoon, shed heavy showers over the land, while the thunder roars in the mountains. The dampness of the air is then so great, that mist and clouds are for many days seen hanging immoveably even over the woods of the lower coast-lands. Frequently, too, the wind blows by reverberation, in an opposite direction, like a hurricane, from the mountains to the coast.

Thus the Camphor-tree grows in a very changeable and generally moist climate, where extreme states of heat and coolness by storm quickly follow each other. About eleven in the morning, in the serenest weather, there is frequently an oppressive warmth, while at noon heavy showers, driven on by a north-west wind and accompanied by thunder and lightning, seem to cover the land.

Surrounding Vegetation.—One consequence of the unsettled character of the climate, of the low elevation of the clouds, and of the cooler temperature in general, is the occurrence of some trees and plants near the sea-coast, which in Java are met with only at a greater height. Thus the Camphor-tree grows often in company, not only with species of *Acacia*, *Anona*, *Michelia*, and *Dipterocarpeæ*, but also with Oaks; and it is found with marsh *Casuarinæ*, with the Nipong Palm (*Oncosperma filamentosum*), and with Benzoin-trees. Amidst the underwood of the forest are seen species of *Melastoma*, *Elettaria*, and other *Scitamineæ*, with *Vitex trifoliata* (which occurs most frequently), and several species of *Rubus*. These plants are seldom found in Java below 3000 feet.

Signs of the presence of Camphor in the tree.—According to the observations of Dr. Junghuhn, the young trees do not contain camphor. The inhabitants of the Batta-lands are accustomed to cut down the oldest and heaviest ones, although the age of the trees is not known; and in reference to a large Camphor-tree, which he saw near Tapanuli, the Rajah Ngabing told him, that his ancestors, as far back as the history of his family went, had known it of the same size. It was probably at least two hundred years old.

Camphor-oil and Camphor.—Camphor-oil, that is to say liquid camphor, occurs in all the trees, even in young ones, and exists in all parts of the tree, but most in the younger branches and leaves. The solid camphor is, however, found only between the woody fibres, and, therefore, only in the trunk. The natives do not know beforehand whether a trunk contains much or little camphor. If, however, there is a large quantity of camphor in the splinters or fibres of the wood, they decide that the fissures of the inner part contain a great abundance. When much gluey, half-solid young camphor shows itself on the radiating extensions, or in the fissures at the lower part of the trunk, they come to the same conclusion. However, the results are frequently fallacious, and they often uselessly cut down trees which produce but very little.

Collection of the Camphor.—The process of collecting the oil and camphor from *Dryobalanops Camphora*, was witnessed by Dr. Junghuhn, near Loemoet (Tapanuli), in Sumatra, at an elevation of 300 feet. The greatest quantity of camphor, in a solid as well as in a young and liquid state, is brought from a height of 1000 feet. The solid camphor is obtained by cutting down the trees, in the inner part of which fissures are found between the woody fibres, which extend longitudinally and are filled with camphor. The young trees do not contain that substance, while the thickest and oldest, that are most filled with it, rarely contain more than two ounces. The natives who are occupied in collecting the precious product, go in a number of twenty or thirty men into those parts of the woods where the Camphor-tree is most often found. They commence constructing cottages, intending to encamp upon the spot for some months. One-half of the company is occupied with severing the trunk near the root, and not, as many others have said, at from fourteen to eighteen feet above the ground. The others are engaged in gathering the camphor from the trees which have been cut down. From the extraordinary thickness of the trunks, it often happens that a whole day is employed in felling a single tree.

On his second expedition from Loemoet to Pertibi, in the year 1841, Dr. Junghuhn visited the bivouac of such a company in the neighbourhood of Hoeraba, and by this means became acquainted with the method by which the natives obtain camphor or camphor-oil from the tree.

The oil is collected in the following manner:—

1. Incisions are made through the outer and inner bark, at the lower part of the trunk close to the root, chiefly where the tree produces the before-mentioned woody radiations, which alternate with vertical cavities, which are also observed in other trees growing between the tropics. The clear, yellow, balsamic, oily juice, which is discharged very slowly, is collected in a half-cylinder of very thin bamboo, cut longitudinally. According to the observation of Junghuhn, who witnessed it, half a day was scarcely sufficient to half-fill a small tea-cup with this liquid, and even this small quantity was mixed with fragments of bark and other impurities. The collected juice is purified by pouring it through a kind of sieve, made from the fibrous tissue of the sheathing footstalk of a palm-leaf (*hindoe*).

The camphor is found as a varnished, gluey, and clammy covering, resembling turpentine, or in a solid grainy state, in the fissures of the bark, and in the laminary prominences. The surface near the root has chiefly a white covering, which is rarely thicker than one or two millimètres. This substance is highly estimated by the Battas, and fetches a high price.

Colebrooke, and many other authors who have written on this subject, have said that the camphor is obtained from the middle of the trunk, and that every tree should produce a quantity of eleven pounds; the camphor being found in the heart of the tree in such a quantity as to fill a cavity of the thickness of an arm. This is quite exaggerated, and must be founded on an error. If it were true, the price of camphor would be lower than it is now. At Padang and at Tapanuli the price of a hundred pounds of camphor is nearly £250. Such a quantity would in that case be obtained from nine trees. That proportion is highly improbable, and suffices to show the inaccuracy of the account. On the contrary, the camphor only occurs in fissures of the wood, and the native of the Battas scrapes it off with small splinters or with his nails.

2. By maceration and decoction of the branches and pieces of bark and wood, another liquor containing camphor is obtained, but still in small quantities, and much mixed with water. The wood is cut into small fragments, and the leaves are bruised and boiled with water in an iron kettle, at the time that the trunk is being cut down, in order to use the pieces in their fresh state. In boiling, an oily substance rises to the surface, which is taken off with the shell of a cocoa-nut cut in half and provided with a handle. The liquor is poured into a bamboo, and closed in with a stopple formed of *hindoe* fibres, and at the return of the expedition after many months it is poured into bottles. Dr. Junghuhn has two bottles filled with the liquid at the place itself.

After a long stay in the woods (frequently of three months) the company, consisting of thirty persons, departs. It frequently happens that during that period they fell more than a hundred trees, and yet they rarely take with them above fifteen to twenty pounds of solid camphor, worth £40 to £50.

Use and price of the Camphor in Sumatra.—Camphor is here collected in a comparatively small quantity. While some thousands of quintals of benzoin are yearly sent into the European markets (*e. g.*, in 1837 three thousand), but ten to fifteen quintals, and often less, are sent of Sumatra camphor. The price is £2. 10s. a pound. It generally comes from Baros, whence the name of Baros camphor. From that place several caravans set out yearly to collect this substance in the woods. The same product comes from Tapanuli, Natal, and Ajer Bangis. It is not exported, for it is collected for the use of the natives wherever the tree grows.

Besides the small quantity which is employed as a remedy against various diseases, we must mention here a particular use, by which a great deal of camphor is wasted, and its rarity and price much increased; and this lavish application of it, together with the slaughter of hundreds of buffaloes sometimes in one day, is one of the principal causes of the poverty of the Batta royal families (Rajahs).

A very ancient custom prescribes, that at the death of a considerable person among the Battas, who, during his life, had a claim to the title of Rajah (sovereign prince), rice be sowed in a sacred place, and that the corpse be kept above ground among the living till the rice has sprung up, grown, and borne fruit. Not before the rice is ripe and gathered in do they think it right to bury the corpse, and it is actually interred with the ears of the rice that was sown on the day of the decease. Thus the burial takes place after five or six months. (The remarkable ceremonies of such a funeral are elsewhere described by Dr. Junghuhn.) The corpse, like the rice-grain six months before, is then committed to the earth; and thus the hope is emblematically expressed, that, as a new life arises from the seed, another life shall begin for man after his death.

During the period previous to interment, the corpses are preserved in wooden coffins within the houses, the women wailing day and night. Trunks of *Durio Zibethinus* (the Durian) are hollowed out to contain the bodies. They are carved with much art, and have at the under part small apertures, through which the fluids may escape. The corpses contained in these coffins are not only spread over with pounded camphor, but entirely covered with it, in such a manner that all the space between the coffin and the body is filled with it. This is the only means known to the inhabitants of the Batta-lands of preserving the bodies of their kings, without smell or corruption, during so many months, in the humid air of such a hot climate. Dr. Junghuhn saw a corpse which had been preserved in this manner during four months, and which was shrunk up like a mummy, and emitted no smell but the penetrating odour of the camphor.

In this way an immense quantity of camphor (a quarter to half a quintal) is consumed, for the purchase of which the family of the deceased king must make the greatest sacrifice, and often sell all their cattle. Every village has such a rajah.

FLORULA HONGKONGENSIS: *an Enumeration of the Plants collected in the Island of Hong-Kong, by* Major J. G. Champion, 95*th Reg.*, *the determinations revised and the new species described by* GEORGE BENTHAM, ESQ.

(*Continued from p.* 50.)

LEGUMINOSÆ (*continued*).

25. Millettia *speciosa*, Champ., sp. n.; scandens, ramulis petiolis inflorescentiaque cano-tomentosis, foliolis 9–13 oblongis puberulis

demum glabratis, racemis densifloris, calycibus breviter pedicellatis sericeo-tomentosis dentibus latis rotundatis, vexillo amplo glabro v. vix glauco-pulveraceo.—*Frutex* scandens. *Tomentum* breve, densum, demum deciduum. *Stipulæ* subulatæ, basi dilatatæ, vix 2 lin. longæ; stipellæ parvæ, setaceæ. *Foliola* 2–3-pollicaria, obtusa v. vix acuminata, basi rotundata, siccitate complicata, supra pallentia, subtus fuscescentia, tenuiter venosa, præter costam tomentellam pilis paucis conspersa. *Racemi* semipedales, longe infra medium floridi. *Bracteæ* lanceolatæ, acutæ, sericeo-tomentosæ, racemum juniorem subcomantes, per anthesin deciduæ. *Pedicelli* floridi 3–4 lin. longi, recurvi. *Bracteolæ* late ovatæ, calycis dimidio breviores. *Calyx* late campanulatus, 5 lin. longus, labio superiore latissimo emarginato, laciniis seu dentibus lateralibus lineam longis rotundatis, infima paulo longiore pariter obtusissimo. *Vexillum* carnosulum, pollicem latum et vix brevius, leviter emarginatum, exauriculatum, supra unguem brevem leviter callosum. *Alæ* oblongæ, obtusæ, leviter falcatæ. *Carina* alas superans, vexillum subæquans, apice arcuata obtusa. *Stamen* vexillare liberum. *Discus* cupularis brevis. *Ovarium* breviter stipitatum, dense tomentosum, ovulis circa 12. *Stylus* glaber.

On Victoria Peak, equally common with *M. nitida*, but not found elsewhere in Hong-Kong. It is also in the Hookerian Herbarium from Millett's collection, but without the precise station. It is chiefly distinguished, when growing, from *M. nitida*, by its larger flowers, white intermixed with a primrose-yellow.

26. Millettia *nitida*, Benth. in Lond. Journ. Bot. vol. i. p. 484.

A trailing shrub, with purple flowers, very common in Hong-Kong, from the level of the sea to the summit of Victoria Peak.

27. Millettia *Championi*, Benth., sp. n.; scandens, præter inflorescentiam puberulam glabra, foliolis 5–7 ovatis oblongisve obtuse acuminatis reticulato-venosis, panicula brevi densiflora, pedicellis calycem glabriusculum subæquantibus, vexillo ecalloso ovarioque glabris.—*Frutex* scandens, lætevirens. *Stipulæ* stipellæque setaceæ. *Foliola* 1–2-pollicaria v. interdum longiora, tenuiter chartacea, utrinque viridia et lucidula. *Racemi* in axillis summis simplices et ad apices ramorum in paniculam brevem dispositi, 1–2-pollicares, fere a basi florentes. *Bracteæ* minutæ, deciduæ, bracteolæ parvæ, ovatæ, diutius persistentes. *Pedicelli* 1½ lin. longi. *Calyx* late campanulatus, dentibus brevissimis latis obtusis. *Corolla* 5 lin. longa, alba, vexillo

basi macula viridi notato. *Alæ* oblongæ, obtusæ, leviter falcatæ. *Carinæ* petala paulo latiora. *Stamen* vexillare a basi liberum. *Discus* brevissimus.

Trailing over rocks on Mount Gough and in the Happy Valley woods, but rare. It flowers in autumn; the fruit has not been seen. In many respects it is allied to the *M. reticulata*, Benth., from China, but that species has the leaves never acuminate, the inflorescence much more developed, the flowers considerably larger and apparently purple, besides other minor differences.

28. Dalbergia *polyphylla*, Benth. in Pl. Jungh.; scandens, foliolis 25–50 parvis lineari-oblongis glabris v. parce pilosulis, cymis axillaribus terminalibusque brevibus subsessilibus pubescentibus, calycis ovati dentibus tubo pluries brevioribus, petalis longe unguiculatis, staminibus 10 monadelphis, ovario glabro.

On the summit of Mount Gough. The specimens are in young fruit only, but agree perfectly well with the flowering specimens gathered by Mr. Cuming in the Philippine Islands. The species is nearly allied to the common Eastern *D. tamarindifolia*, but the leaflets are much smaller (4–5 or rarely near 6 lines long), less unequal at the base, and smooth or nearly so; and I have always found 10 instead of 9 stamens, but the presence or absence of the vexillary stamen in the monadelphous *Dalbergiæ* may not be always constant in the same species.

29. Bowringia *callicarpa*, Champ., gen. nov. *Sophorearum*, affine *Baphiæ*.

Gen. Char. BOWRINGIA*. *Calyx* membranaceus, laxe cyathiformi-campanulatus, ore truncato minute 5-dentato. *Vexillum* orbiculatum. *Alæ* vexillo subæquilongæ, falcato-oblongæ. *Carinæ* petala alis subsimilia nisi majora, dorso vix connata. *Stamina* 10, libera v. ima basi hinc inde connata, omnia fertilia, antheris oblongis. *Legumen* stipitatum, inflatum, ovoideum v. subglobosum, acuminatum, scariosum. *Semina* pauca, oblonga v. globosa, strophiolata. *Cotyledones* crassæ. *Radicula* brevissima, recta.—Species unica *B. callicarpa*.—*Frutex* scandens, glaberrimus, habitu *Baphiæ* v. *Leucomphalo* similis. *Stipulæ* minutæ. *Folia* unifoliolata, exstipellata. *Petiolus* ½–1 poll. longus. *Foliolum* ovatum v. ovali-oblongum, acuminatum, basi rotundatum, 2–3 poll. longum, 1–1½ poll. latum, rigide chartaceum, utrinque viride, penninerve et reticulato-venosum. *Racemi* axillares v. subterminales, 2–5-flori, folio multo breviores. *Pedunculus* communis 2–6 lin., pedicelli 3 lin. longi. *Bracteæ* minutæ, caducissimæ; bracteolæ sub calyce parvæ, diutius persistentes. *Calyx* 1½ lin. longus, laxus, per anthesin sæpe reflexus. *Petala* alba, brevissime unguiculata. *Vexillum* et *alæ* 5 lin., *petala carinalia* 6 lin. longa.

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* Named by Major Champion in honour of his friend John O. Bowring, Esq., who has been for some time investigating the flora of Hong-Kong with much zeal, and has formed large collections there, and to whom are due many of the stations given in the present Florula.

Abundant in ravines of Victoria Peak and elsewhere. The genus is closely allied in habit and character to *Baphia*, *Bracteolaria*, and *Leucomphalus*, all from tropical Africa, but the calyx is neither divided nor spathaceous, and the fruit (which I have not myself seen) is peculiar. It is described and represented in Major Champion's MS. notes and sketches as above an inch long, inflated, green, scariose, reticulate, and smooth, varying in shape from ovate to globose, narrowed into a stipes at the base and into a point at the apex, with one or two perfect seeds (the remaining ovules being usually abortive). These seeds (of which I have examined one) are large, scarlet, oblong-globose, with a caruncula at the hilum, the cotyledons thick and fleshy, with a very short almost papilliform straight radicle.

076 30. Ormosia? (Marquartia?) *pachycarpa*, Champ., sp. n.; foliolis 7 obovali-oblongis breviter et abrupte acuminatis supra glabris viridibus, subtus petiolisque tomentoso-lanatis, calycibus subsessilibus tomentosis, legumine lignoso turgido densissime tomentoso lanato intus non septato.—*Tomentum* petiolorum, foliolorum paginæ inferioris et leguminum densum implexum. *Foliola* majora semipedalia. *Legumen* monospermum pollicare, v. dispermum bipollicare, fere pollicem latum, sessile, obtusum, crassissime coriaceo-lignosum, ex ovario circa 6-ovulato accretum. *Semen* ei *Tamarindi Indici* paulo majus, irregulariter rhomboideo-quadratum v. orbiculare, crassum, testa nitida rubro-fusca. *Cotyledones* crassi, basi profunde et inæqualiter cordati, radicula brevissima recta.

A tree not uncommon in the Happy Valley woods and elsewhere, but never found in flower, and only once (January, 1850) in fruit. I have been much in doubt as to its affinities without having seen the flowers, but the remains of stamens at the base of one of the pods show them to have been free, and I have now little hesitation in referring it to *Ormosia*,

a genus represented by several species in East India. It is probable that the *Marquartia* of Vogel, a Chinese plant, evidently very near to the present species, is likewise an *Ormosia*. It is true that the stamens are described and figured as diadelphous, but Vogel could only examine a single young bud already much injured, and the connection of the stamens as figured is very short and no more than often occurs in *Sophoreæ* in the very young state. Another species, allied to these two, but scarcely identical with either, is figured in the Chinese drawings in the possession of the Horticultural Society, and is represented in Dr. Lindley's herbarium by a specimen in fruit.

31. Ormosia (Layia) *emarginata*, Benth.—*Layia emarginata*, Hook. et Arn. Bot. Beech. p. 183. t. 38.

A neat erect shrub, very common in the Happy Valley woods and elsewhere. I can find no character to distinguish *Layia* from *Ormosia*, but the transverse septa in the pod, which exist also in some of the American species.

32. Guilandina *Bonduc*, L.

Frequently observed growing wild in Hong-Kong, but no specimens were collected.

33. Cæsalpinia *Chinensis*, Roxb. Fl. Ind. vol. ii. p. 361.

Common in ravines, especially towards West Point, flowering in autumn.

34. Cæsalpinia *vernalis*, Champ., sp. n.; scandens, petiolo communi partialibusque aculeatis, pinnis circa 12-jugis, foliolis 4–6-jugis ovatis acutis coriaceis glabris supra nitidis subtus pallidis, panicula terminali rufo-tomentosa, pedicellis calyci subæquilongis.

On the banks of a stream running towards Little Hong-Kong, flowering in spring. Of this I have only seen a single leaf and panicle. It is evidently allied to *C. Nuga*, but at once distinguished by the reddish down clothing the inflorescence, pedicels, and even the calyx, the shorter pedicels and larger calyces, and much smaller and more pointed leaflets. The leaf in my specimen is above a foot long, the pinnæ 2–2½ inches, the leaflets 8–10 lines long.

35. Cassia (Chamæcrista) *angustissima*, Lam.—*C. mimosoides*, Linn. var. *β*, Vog. Syn. Cass. p. 69.

Victoria Peak and other localities.

36. Phanera *corymbosa*, Benth. Pl. Jungh.—*Bauhinia corymbosa*, Roxb.—DC. Leg. Mem. t. 70.

About East Point, covering the banks in April with its fragrant white flowers, and exceedingly attractive to *Coleoptera*. A similar species with smaller leaves and flowers, in Mr. Cay's garden, was said to grow upon Victoria Peak, but there are no specimens in the collection. This may probably have been the *Ph. glauca*, not uncommon in the Moluccas.

37. Phanera *Championi*, Benth. sp. n.; scandens, folio basi late cordato 5–7-nervio, foliolis ad $\frac{2}{3}$ connatis semiovatis obtusis supra glabris nitidis subtus ramulisque novellis tomentellis mox glabratis, racemis elongatis subsimplicibus multifloris, calycis tubo brevissimo laciniis herbaceis lanceolatis acutis, petalis parvis unguiculatis pilosulis, ovario tomentoso.—*Frutex* alte scandens, præter canescentiam inflorescentiæ et partium juniorum glaber. *Cirrhi* simplices, circinati, oppositifolii, solitarii v. gemini. *Stipulæ* minutæ. *Petioli* $\frac{1}{2}$–1-pollicares. *Folia* 2$\frac{1}{2}$–4 poll. longa, 2–2$\frac{1}{2}$ poll. lata. *Racemi* oppositifolii, simplices v. ad apices ramorum subramosi, 4–8-pollicares, fere a basi floribundi. *Bracteæ* minutæ, setaceæ. *Pedicelli* 6–8 lin. longi, versus medium bracteolis 2 minutis alternis instructi. *Calyx* viridis, tubo linea breviore turbinato, laciniis 2 lin. longis. *Petala* vix longiora, tenuia, alba. *Stamina* 3 duplo longiora, sterilium rudimenta inconspicua. *Discus* carnosus, calycis tubum omnino implens, vix tamen exsertus. *Ovarium* brevissime stipitatum, oblongum, bisulcatum, tomentosum, in stylum brevem attenuatum. *Ovula* 6–8. *Legumen* compressum, glabrum, inter semina contractum, circa 3 poll. longum, 1 poll. latum, 3–5-spermum.

Common in ravines of Victoria Peak, at East Point, etc.

This very remarkable species approaches in some respects in habit the *Lasiobema anguina* (*Bauhinia anguina*, Roxb.), and I had at first thought it might be referable to that genus, if circumscribed as Korthals originally proposed, but a careful examination shows that, like the *B. retusa*, Roxb., it belongs to the largest of the Asiatic Bauhinoid genera, *Phanera*, as characterized in the 'Plantæ Junghuhnianæ.' In *Ph. Championi*, as in *Ph. retusa*, the tube of the calyx is evident, though very short and entirely filled by the fleshy disc, whilst in *Lasiobema anguina* the calyx is open and the disc is exserted, pulviniform, and though unilateral, rather hypogynous than perigynous.

The plant gathered by Mr. Hinds in Hong-Kong, and referred by me formerly to *Bauhinia scandens*, Linn. (a very doubtful species), is not in flower, but is probably a *Phanera*, different from either of the two above enumerated.

38. Gleditschia *Sinensis*, Lam.?

Victoria Peak, rare in Hong-Kong, more abundant on the China coast. Of this I have only seen fragments, and am not certain as to the species. Major Champion never saw it in flower.

39. Acacia *concinna*, DC.?

Happy Valley. A flowering specimen precisely similar to the common form of *A. concinna*; with it, however, are loose pods (perhaps from a different tree) of either an *Albizzia*, or some very different species of *Acacia*.

40. Albizzia *Milletti*, Benth. in Hook. Journ. Bot. vol. iii. p. 89.

Happy Valley.

41. Albizzia? *Championi*, Benth., sp. n.; ramulis petiolisque minute puberulis, pinnis 1–2-jugis, foliolis ultimarum 4–5-jugis oblique ovatis obtuse acuminatis glabris supra nitidis, glandula parva in medio petiolo jugalibusque paucis, paniculis racemiformibus pedunculisque solitariis tomentellis, floribus sessilibus in capitulo pluribus, calyce dimidio corollæ breviore, ovario glabro.—*Arbor* elata. *Petioli* communes 2–3-pollicares. *Pinnæ* terminales 4–6-pollicares, inferiores breves v. nullæ. *Glandulæ* (præter petiolarem) adsunt etiam sub pinnis et hinc inde sub foliolis. *Foliola* terminalia opposita bipollicaria, inferiora sæpe alterna et minora, omnia in acumen breve obtusum plus minus producta, basi inæqualiter angustata et petiolulata, venosa, supra nitidissima, subtus pallidiora. *Paniculæ* racemiformes, folio subbreviores. *Pedunculi* 3–6 lin. longi, inferiores distantes, superiores conferti. *Capitula* globosa, minute sericeo-puberula. *Bracteæ* angustæ, calyce breviores. *Calyx* lineam longus, breviter 5-dentatus. *Corolla* 2 lin. v. paulo longior, subinfundibularis. *Stamina* duplo longiora, tubo incluso. *Ovarium* brevissime stipitatum.

A large tree; woods, Hong-Kong. The fruit is not known, therefore its place in *Albizzia* is not absolutely certain; but the inflorescence is nearer that of the large-leaved *Albizziæ*, than of the corresponding groupe of *Pithecolobium*.

Besides the above, Major Champion has observed *Crotalaria retusa* and *Abrus precatorius* growing wild in Hong-Kong, but neglected to gather specimens. The *Arachis hypogæa* and one or two *Cassiæ* are also cultivated there.

ROSACEÆ.

1. Eriobotrya *fragrans*, Champ., sp. n.; foliis longe petiolatis oblongo-ellipticis obtusis vix dentatis glabris nitidis, thyrsis laxis ferrugineo-tomentosis.—*Frutex*, ramulis glabris v. apice leviter tomentellis. *Folia* laurina, 4–6-pollicaria, sæpe integerrima, angustata, petiolo ultrapollicari, venis lateralibus multo minus conspicuis et paucioribus quam in *E. Japonica* et in *E. elliptica.* Thyrsi in corymbum terminalem sessilem foliis breviorem dispositi, tomento multo breviore quam in *E. Japonica.* *Flores* nunc pedicello 2–3-lineari fulti, nunc ad apicem ramuli 2–4-linearis gemini v. terni subsessiles, iis *E. Japonicæ* paulo minores, fragrantissimi. *Calyx* ferrugineo-tomentosus, basi turbinatus, limbo explanato, lobis brevibus rotundatis. *Petala* late ovata, glabra. *Stamina* 30–40. *Styli* 5, villosi, basi subcoaliti. *Ovarium* 5-loculare, ovulis in quoque loculo geminis adscendentibus. *Fructus* $\frac{3}{4}$ poll. diametro.

Very scarce, in a ravine on Mount Victoria. The very fragrant flowers are the abode of a remarkable new genus of *Longicornes*, at first sight resembling an ant, and approaching to the curious Mexican *Ephophorus spinicornis.* The *Eriobotrya Japonica* is commonly cultivated in Hong-Kong, but not indigenous.

2. Photinia *prunifolia*, Lindl. Bot. Reg. t. 1956.

Common in the Happy Valley woods; flowers in April.

3. Raphiolepis *rubra*, Lindl. Collect. t. 3.—*R. phæostemon*, Lindl. l. c.?

A common shrub, all over the island, flowering in winter, varying in size and number of the flowers. Young plants on bare hills and flowering early, usually produce a very scanty inflorescence; about March the spring fogs bring them forward in great luxuriance. There does not appear to be any good specific difference to distinguish the *R. phæostemon;* at any rate, but one species has been observed in Hong-Kong.

4. Rosa *multiflora*, Thunb.—DC. Prod. vol. ii. p. 598.

Observed by Major Champion only on the opposite China coast, but Mr. Hinds gathered it wild in the island itself.

5. Rubus *reflexus*, DC. Prodr. vol. ii. p. 566.

6. Rubus *parvifolius*, Linn.

7. Rubus *glaberrimus*, Champ., sp. n.; fruticosus, sarmentosus, aculeatus, glaberrimus, foliis trisectis v. summis integris, segmentis

ovatis acuminatis serratis, lateralibus brevissime petiolulatis, pedunculis folio brevioribus 1–3-floris, sepalis ovatis imbricatis lævibus fructum vestientibus, petalis oblongis.—*Foliorum* segmenta 2–3-pollicaria, lateralia a terminali distantia. *Pedunculi* axillares v. terminales, ½–1 poll. longi, nunc simplices uniflori, nunc versus medium in pedicellos 2–3 uniflores divisi. *Sepala* 4–5 lin. longa, breviter acuminata. *Fructus* 4 lin. diametro, calyce obtectus. *Carpella* numerosa, drupacea, semi-ovoidea, stylo filiformi subpersistente terminata.

The above three *Rubi* are all found in ravines of the hills, and are all in flower about June or often much earlier.

RHIZOPHOREÆ.

1. Kandelia *Rheedii*, Wight et Arn.—Arn. in Ann. Nat. Hist. vol. i. p. 365.

In an æstuary at Little Hong-Kong.

2. Carallia *Sinensis*, Arn. in Nov. Act. Nat. Cur. vol. xviii. p. 335.

Very rare, in a ravine on Mount Victoria; found in flower on December 26th, 1849.

ONAGRARIEÆ.

1. Jussiæa *villosa*, Lam.—Wight et Arn. Prod. vol. i. p. 336.—*J. fruticosa*, DC. Prod. vol. iii. p. 57.

2. Ludwigia *parviflora*, Roxb.—Wight et Arn. Prod. vol. i. p. 336.

There being but little pasturage in Hong-Kong, these two common Indian species are rather scarce in the island.

3. Goniocarpus *scaber*, Kœn.—DC. Prod. vol. iii. p. 66.

Common on grassy slopes, Victoria Peak, etc.

LYTHRARIEÆ.

1. Ameletia *subspicata*, Benth. in Lond. Journ. Bot. vol. i. p. 484.

Common in ditches, flowering about February.

2. Lagerstrœmia *Indica*, Linn., var. *pallida*.

Wild in the woods near the Buddhist Temple. Shrubby, with the flowers much paler in colour than in the ordinary cultivated variety, which is also to be met with in gardens in Hong-Kong.

(*To be continued.*)

Abstract of a Journal kept during the voyage of H.M.S. Herald; *by* BERTHOLD SEEMANN.

(*Continued from p.* 26.)

December, 1850.—We had hardly taken up our position in Singapore roads when the ship was surrounded by a number of shore-boats loaded with crockery, clothing, parrots, monkeys, different articles of Gutta Taban, and a variety of eatables. Among the latter were Bananas, Mangoes, Pine-apples, Limes, Jacks, Oranges, Pompelmoose, etc., but on the whole, no great diversity of plants; nor indeed, have I ever visited a place which in this respect could equal either Panamà or Guayaquil, where the fruits of both the Old and the New World seem to be collected.

One of the finest productions of Singapore, the Mangosteen, was nearly out of season, and could only be procured in small quantities; but neither these samples, nor those afterwards obtained off Sumatra, came up to the high expectation which I had formed as to their taste. I am glad, however, to have met with the fruit. It enables me to compare it with its two rivals, and I may now say that I have tasted "the three finest fruits in the world," in those localities in which they are supposed to attain their highest perfection: the Pine-apple in Guayaquil, the Chirimoya on the slopes of the Andes, and the Mangosteen in the Indian Archipelago. Perplexing as always must be the office of a Paris, when on either side such high claims are advanced, yet, I think, in this case we may, without offence to the advocates of the other, assign "the apple" to the Chirimoya. Its taste surpasses that of all other fruits, and Hænke was quite right when calling it a masterpiece of nature.

Singapore makes a favourable impression on the voyager. A mass of stately buildings, half-concealed by groves of Bamboos, Fig-trees, Pucurus, Catechu and Cocoa-nut Palms, encircled a bay, over which the busy operations of shipping diffuse animation and life. On a hill, the slopes of which are clothed with numerous Nutmeg-trees, and a turf of brilliant green, stands the Government-house, while the background, as if to make up for the want of elevated mountains to complete the picture, is generally hid from view by the dense vapour, fog, or rain, hanging over the almost impenetrable jungle with which the greater portion of the island is still covered. The aspect of the whole, however, is destitute of that grandeur by which Hong-Kong is so eminently distinguished; but Singapore, from its geographical position, its salubrious, though hot climate, the great capacities of its soil, and the incalculable advantage arising from its being a free port, is of far greater importance than Hong-Kong ever has been or ever will be. While the latter is merely a place carrying on a limited trade with a certain portion of the Chinese empire, the former concentrates all the rich commerce of the Indian Archipelago, and will continue increasing in proportion as the resources of these regions are developed.

I have said that the greater portion of Singapore is still covered with jungle, but this does not seem destined to remain long. Every year immigrants arrive from almost every part of Asia,—China, Bengal, Cochin China, Siam, etc. The forests, which so long remained undisturbed, are fast disappearing, substantial roads intersect the colony in different directions, and extensive plantations are everywhere springing up. The cultivation of the Nutmeg has lately been prosecuted here with great zeal. When the settlement was established, much prejudice existed with respect to it. A general belief then prevailed, that, with so great an investment of capital which such plantations require, and without protecting laws, much risk was incurred. Now, however, the fallacy of these views has been demonstrated. Several far-sighted individuals, who early commenced the cultivation of the spice, are now reaping a golden harvest from their enterprise. Others have been induced to follow their example; for it has been found that the Singapore planters, with free labour, and without protecting laws, are enabled to produce their nuts and mace at a cheaper rate that the Dutch, with all their antiquated institutions. Another decisive proof, if any indeed was wanting, that industry only desires to be free and unfettered, in order to be productive of the best results.

The perseverance, care, and foresight which are required in order to cultivate the Nutmeg successfully, are truly astonishing. The preparation of the soil, manuring, shading of the young plants, etc., are very laborious operations; and how often do they meet with disappointment! After years of attention and the expenditure of great sums, the trees begin to blossom, when, alas! not unfrequently more than one-half turn out to be either male or monœcious plants, only to be felled by the axe. This circumstance is of great importance; in order to remedy the evil various experiments have been made to propagate the female plants by grafting or by layers; and, although these processes have been successful, it remains yet to be ascertained whether trees multiplied in this way are as productive as those raised from seeds*.

Besides the Nutmeg, extensive plantations of the Cassava (*Manihot utilissima*, Pohl) have been established; and it is stated that they pay exceedingly well. The farinaceous substance, prepared from the plant, is exported partly raw, partly in the form of pearl sago; and so well has the latter preparation been imitated, that it has actually been mistaken for real sago. The *Manihot* is naturalized—not indigenous, as some think—in many parts of Singapore. The white residents call it *Tapioca;* the Malays, *Ubi caju.* The Mexican appellation is *Quauhcamote;* the West-Indian, *Cassava*, *Cazabi*, and *Mandioc;* and the New-Granadian, Ecuadorian, and Peruvian, *Yuca.* It is a curious coincidence, that both the Mexican and Malayan names of this shrub signify precisely the same, viz., "woody tuber," as its roots, or properly speaking, its tubers, when remaining too long in the ground, become as hard as wood, and unfit for use†.

The Cocoa-nut Palm is another production cultivated to a considerable extent, principally for the sake of its oil and fibre. The Toddy, which the natives extract from the leaves, is here of no commercial importance. It has a sweet and pleasant taste, but is much inferior in flavour to the Palm wine which the inhabitants of tropical America know so well how to prepare, and which, if good, is equal, if not superior, to the best champagne. Unfortunately, in order to extract the latter, the mere tapping of the leaves, as with the Toddy, is not sufficient; the whole Palm has to be felled, which, even in places where those plants are common, is done, I thought, with some reluctance. For who likes, merely for the sake of a few gallons of wine, to cut down trees which may be turned to such manifold uses?

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* See an excellent account of the Nutmeg and its cultivation by Dr. T. Oxley, in the 'Journal of the Indian Archipelago,' vol. ii. p. 641–661.

† It seems to be little known that it is from this plant, and through the following mistake, that Yucatan derives its name. *Yuca*, in the language of that country, is the term applied to *Manihot utilissima;* *Tal*, that to the field on which the shrub grows. When, in 1517, the plant was shown to the prisoners brought to Cuba by Hernandez de Cordoba and his followers, they immediately recognized it, exclaiming "*Yuca-tal*," which was supposed to signify their country; and this expression having been corrupted into Yucatan, have ever since been applied to that part of America still bearing the name. See Bernal Diaz del Castillo's 'True History of the Conquest of Mexico,' for further particulars. The edition of that work, consulted by me, contains several typographical errors. Yuca is written both *Yuca* and *Yucu;* *Tal*, *tale* as well as *tal:* which is the most correct, I am unable to say. *Tal* is probably the same as the Aztec *tlan* or *tlalli*, which signifies country, territory, soil, earth; and appears in the composition of several Mexican names, for instance, Mazatlan, Mezitlan, etc.

The *Areca Catechu* has not yet received the attention of capitalists, and consequently no plantations of any extent are to be met with. The Malays in Singapore chew its nut, together with Gambir, Tobacco, lime, and the leaves of the Siri (*Piper Siriboa*, Linn.); while the Chinese practise the same filthy habit, with the only difference, that they use the foliage of the Black Pepper (*Piper nigrum*, Linn.) instead of that of the Siri. This statement, however, applies only to the colonists in the island: in the southern parts of China the people avail themselves of the leaves of *Piper Betle*, Linn. Though the quantity of tannin contained in the Betel-nut must exercise an injurious influence, yet it is a mistake to suppose that the mere chewing of it gives to the mouth an offensive appearance; unless the other ingredients are added, the saliva hardly changes its natural colour.

Black Pepper (*Piper nigrum*, Linn.) and Gambir (*Uncaria Gambir*, Roxb.) are grown in great quantities, and exclusively by the Chinese, for both these articles are so exceedingly cheap that Europeans have not deemed it worth their while to engage in the speculation. Pepper and Gambir plantations are always combined, because the refuse of the Gambir-leaves serve as an excellent manure for the Pepper; and moreover, what is of equal, if not of still greater, importance, kills the Lalang (*Andropogon caricosus*, Linn.), a plant which, like the couch-grass (*Triticum repens*, Linn.), spreads with astonishing rapidity over the fields, growing so close together and so high, that within a short space of time valuable plantations are rendered useless, and many have to be given up from the utter impossibility of freeing the ground from this weed.

The process by which Gambir is extracted and prepared is simple. The leaves are boiled in water until all their astringent property is extracted. The decoction is then poured into another vessel, in which it becomes inspissated, and, when nearly dry, is cut in small square pieces, and thus brought into the market. M'Culloch states that sago is used in thickening it. This, however, at least in Singapore, is not the case; but, instead of sago, a piece of wood is dipped into the vessel, by which the desired effect is produced. It must, indeed, be an extraordinary substance, the mere dipping of which into the fluid can cause it to become a thickened mass. I was very eager to obtain a piece of this wood; unluckily, the Chinaman, whose laboratory I visited, could not be persuaded to part with his, and a friend of mine, who was exerting himself to procure a sample, had not succeeded at the time of the Herald's departure: he promised, however, to send it to England, accompanied by the Malayan name, and specimens of the tree.

The Arrow-root is different from that of the Sandwich Islands, being made from the tubers of *Maranta arundinacea*, Linn. The cultivation of the plant commenced only a few years ago, and is at present not very extensive, but is said to be annually increasing. Cloves, Cinnamon, Cocoa, Siri, and Rice, being as yet only grown in small quantities, do not constitute articles of export; indeed, it is stated that all the Rice produced in the island is hardly sufficient to feed its population for a single week. Sago is not an indigenous production; it is brought from Cochin China, Borneo, Java, Sumatra, Malacca, Penang, and Celebes, and is only prepared in Singapore by the Chinese to be afterwards exported to other countries. The cultivation of the Sugar-cane, and the manufacturing of the different extracts from it, have hitherto, in a pecuniary point of view, proved abortive, and several large estates have had to be given up in consequence. It is difficult to account for this failure, as climate, soil, the low price of labour, and the facilities for shipping the produce, would argue in favour of success. Similar disappointments have been experienced in rearing Cotton and Coffee, though in this case there were several physical obstacles that proved insurmountable.

Indigenous productions of any great commercial value, Singapore has none. Rattan is common. From an Acanthaceous plant the Chinese extract, merely for their own immediate use, a blue dye, which is probably the same as that called "*Room*" in the 'Vegetable Kingdom.' Dr. Lindley states that it is obtained from a *Ruellia*, but as he does not particularize the species producing it, and none of the specimens collected by me were in flower, I had no means of arriving at the solution of the question.

The Taban (*Isonandra Gutta*, Hook.), which was formerly so plentiful, has long since been extinct. A few isolated trees may here and there occur, but they are very scarce, and I have not been able to obtain even the sight of one. Several of the white residents keep in their dens, as a curiosity, a plant or two, but they grow very slowly. It must ever be an object of regret, that on the first introduction of the Taban Gum its proper name was not promulgated. Now everybody in Europe and America speaks of Gutta Percha, when, in fact, all the time they mean the Gutta Taban. The substance termed by the Malays "Gutta Percha" is not the produce of the *Isonandra Gutta*, Hook., but that of a botanically unknown tree, a species of *Ficus*, I am told. The confusion of these two names has become a popular error—an error which science will have to rectify.

The exportation of the indigenous Gutta Taban from Singapore commenced in 1844, but as early as the end of 1847 all, or at least most, of the trees had been exterminated. That at present shipped from the place is brought in coasting vessels from the different ports of Borneo, Sumatra, the Malayan peninsula, and Jahore Archipelago*. The difference existing in its appearance and property is owing to the intermixture of Gutta Percha, Jelotong, Gegrek, Litchu, and other inferior Guttas, made by the natives in order to increase the weight. Though far from being extinct in the Indian Archipelago, Gutta Taban will every year be more difficult to obtain, as the coast region is said to be pretty well cleared, and a long transport from the interior must, by augmenting the labour, increase the value of the article.

A few months after the publication of your first account of the plant, in January, 1847, an article on the same subject appeared in the 'Journal of the Indian Archipelago,' by one of its most able contributors, Dr. T. Oxley. As that article contains many statements not contained in yours, and as it may possibly have escaped your notice, I shall make a few extracts from it.

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* "The total export of Gutta Taban from Singapore has been:—

In 1844	1	picul.
In 1845	169	„
In 1846	5,364	„
In 1847	9,296	„
In 1848 to the 1st of July	6,768	„
Total	21,598	piculs, valued at

274,190 Spanish dollars. About 270,000 trees have probably been felled during the three and a half years that the trade has existed, and the value of each tree has thus on an average been about a dollar."—*J. R. Logan*, 'On the Range of the Gutta Taban Collectors, and present Amount of Import into Singapore.'—Mr. Logan has promised an article on the various substances intermixed with the Taban, a subject of the highest interest; but he has hitherto disappointed his readers.

"The Gutta Taban tree belongs to the Natural Order *Sapotaceæ*, but differs so much from all described genera that I am inclined to consider it a new one. I shall, therefore, endeavour to give its general character, leaving the honour of naming it to a more competent botanist, especially as, from want of complete specimens, I have not quite satisfied myself regarding the stamens and fruit.

"The tree is from sixty to seventy feet high, from two to three feet in diameter. In its general aspect it resembles the Durian (*Durio Zibethinus*, Linn.), so much so as to strike the most superficial observer. The leaves are alternate, obovate-lanceolate, entire, coriaceous, their upper surface is of a pale green, and their under surface covered with a close, short, reddish-brown hair. The flowers are axillary, from one to three in the axils, supported on short curved pedicels, and numerous along the extremities of the branches. The calyx is inferior, persistent, coriaceous, divided into six sepals, which are arranged in double series. The corolla is monopetalous, hypogynous, and divided, like the calyx, into six acuminate segments. The stamens, inserted into the throat of the corolla, are in a single series, and variable in number, but to the best of my observation, their normal number is twelve; they are most generally all fertile. The anthers are supported on slender bent filaments, and open by two lateral pores. The ovary is superior, terminated by a long single style, and six-celled; the cells are monospermous. The fruit is unknown to me.

"Only a short time ago the Taban-tree was tolerably abundant on the island of Singapore, but already (middle of 1847) all the large timber has been felled. Its geographical range, however, appears to be considerable, it being found all up the Malayan peninsula, as far as Penang, where I have ascertained it to be plentiful. Its favourite localities are the alluvial tracts on the foot of hills, where it forms the principal portion of the jungle.

"The quantity of solid Gutta obtained from each tree, varies from five to twenty catties, so that, taking the average of ten catties, which is a tolerably liberal one, it will require the destruction of ten trees to produce one picul. Now, the quantity exported from Singapore to Europe, from the first of January, 1845, to the middle of 1847, amounted to 6918 piculs, to obtain which 69,180 trees must have been sacrificed! How much better would it be to adopt the method of tapping the tree practised by the Burmese in obtaining the caoutchouc, than to continue the present process of extermination*."

A mercantile house in Singapore lately received from Manilla a gum which was supposed, by those who sent it, to be Gutta Taban, but proved a different substance. It was accompanied by specimens of the tree producing it, and a note stating that the gum abounded in the Philippine Islands. As it will probably make its appearance in England, and perhaps become of some importance, I may add that those specimens presented to me by the merchant belong to the genus *Ficus;* but whether to a new or an already described species, want of books prevented me from determining.

Our short stay did not enable me to become so intimate with the flora, as to attempt a generalization; I can only offer some isolated remarks. *Rubus reflexus*, *Myrtus tomentosa*, and *Pandanus fœtidus* are here as common as in the southern parts of China. Ferns, *Melastomaceæ*, and *Orchideæ* of course abound in so damp a locality. The genus *Clerodendron* is represented by several species, the most common of which is *C. viscosum;* another, which I collected on the slopes of a hill, has a purple calyx, a yellow corolla, and a black drupe, and is allied to, if not identical with, *C. lævifolium*, Blume. *Cassia alata*, *Solanum nigrum*, *Asclepias curassavica*, and *Curcas purgans* are, as in most tropical countries, to be met with. *Jasminum Lessertianum*, Alph. DC., an inhabitant of the jungle, is an elegant shrub, bearing pure white, though inodorous flowers. *Dilivaria ilicifolia*, with pale flesh-coloured corollas, grows in company with *Acrostichum aureum* in swamps and on the muddy bank of rivulets. The genera *Vitex*, *Psychotria*, *Emilia*, *Mussænda*, *Calamus*, *Morinda*, *Andropogon*, *Ficus*, *Croton*, etc., have one or more representatives. The Pucuru (*Casuarina equisetifolia*, Linn.) is a noble tree, resembling our Fir. It is cultivated in avenues and around dwellings, where it displays its beauties to the greatest advantage; combining the regular growth and pyramidical shape of *Coniferæ*, with an entire absence of the stiff and uncouth appearance for which so many of that tribe are noted.

The Fauna of the island seems to be very varied. Of quadrupeds, a deer, a tiger, and a pig (*Sus babyrussa*, Buff.), may be enumerated. The depredations of the tigers are so frequent, that hardly a week passes without two or three persons being carried off. The daring of these beasts is indeed great. In one of my excursions I came to a Gambir plantation, which, being situated rather far in the jungle, is very often subject to their visits. Only the night previous to my arrival, a large tiger had come close to a hut in which ten of the Chinese labourers were lodged, commencing there a most terrible howling. The people tried, by hissing, clapping their hands, and beating of metallic vessels, to frighten it away. But the animal, nevertheless, continued its howling, and already prepared for an attack on the slight cane-hut, when the ten, now almost driven to despair, gave such a yell that made the woods resound, and the tiger abandoned the prey.

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* T. Oxley, in the 'Journal of the Indian Archipelago,' vol. i. p. 22–30.

Some contend that tigers show a predilection for coloured men, as, ever since the establishment of the colony, no European has been killed; but I think we may ascribe it to the circumstance that white men do not expose themselves so much as the coloured races, nor enter the forest without being armed and in parties together. It is also stated, that the tigers recruit their declining numbers by swimming across the narrow strait which separates Singapore from the mainland of Asia. This, however, is disputed by others, who maintain that all the tigers are bred in the island; be this as it may, it is certain that they are very numerous, and that the Government, in order to lessen the accidents resulting from their depredations, has been compelled to offer a reward of fifty Spanish dollars for every tiger killed. The hunters are, therefore, well paid for their trouble. Besides the prize, they obtain eight or ten dollars for the skin of the animal, and realize about an equal sum from the flesh, which is eagerly bought by the Chinese, who eat it with the hope that it will make them strong.

Elephants are not now indigenous; only a few domesticated ones are kept in the plantations for working; on the adjacent mainland, however, both elephants and tapirs (*Tapirus Indicus*) abound. One of the latter—in comparison with which the American species, the *Macho de monte*, or *Gran bestia*, of the Panamians, is a mere dwarf—was, during our visit, offered for the sum of 150 Spanish dollars. It certainly would have been an excellent specimen for any zoological collection.

The feathered tribe is numerous and brilliant; and fish, I think, exist almost in as great a variety as in China. Of snakes, mosquitoes, centipedes, scorpions, and similar tormentors of mankind, Singapore has its due share. The scorpions are larger than I have ever seen elsewhere. One I caught in the jungle was nearly seven inches in length, and of a dark brown, almost black, colour. I find that the Malays know, as well as the Mexicans, that the best remedy for scorpion-bites is the scorpion itself, though they differ somewhat in its application. The Mexicans plunge the animal in spirits, and then apply the infusion to the wound, while the Malays make a direct use of its pounded body.

My excursions extended in different directions; but as no mountains exist, there is not much choice. One day I intended to explore a small river which runs through an estate belonging to Mr. Montgomerie, whose father, the well-known Dr. W. Montgomerie, rendered such eminent services to science by the first introduction of the Gutta Taban. This river had been ascended by both Meyen and Mrs. Ida Pfeiffer, who expressed themselves very much pleased with the locality; but as no rain had fallen for several days, the shallowness of the water prevented me from following their traces. Mrs. Pfeiffer is a German lady, who has excited great interest in those parts which she visited; and, indeed, a lady who, unaccompanied by any male protector, makes a voyage round the world merely for the sake of enriching natural history, must ever be an object of admiration. Mrs. Pffeiffer's expenses are chiefly defrayed, I understand, by a wealthy bookseller in Vienna, who thus encourages her in these pursuits with the view of publishing the result*.

While staying at Singapore I experienced great kindness from several of the residents, especially the house of Rautenberg and Schmidt. The attention which I received at almost every place, even the most remote, I am far from ascribing to any personal merit or advantage, but rather to the daily extending spread of education, and the consequent favour which people are inclined to bestow upon science and even its most humble promoters; and I think that such acts should always be duly acknowledged whenever place and opportunity present themselves.

On the 9th of January, 1851, we continued our voyage, and, passing between the numerous islands of the Indian Archipelago, reached the Straits of Sunda, where a series of calms and light winds detained us a few days. The sight of these Straits is indeed beautiful. On one side Java, on the other Sumatra, both teeming with vegetation, and presenting a variety of tints, a freshness, a luxuriance truly wonderful, rendered still more imposing by the elevated mountains which charmingly contrast with the primeval forest, and, like light blue clouds, confine the view on the distant horizon.

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* The narrative of this remarkable voyage has since been published in various languages.

We approached Sumatra very closely, and cast anchor in the afternoon of the 15th of January. Captain Kellett was kind enough to cause me to be landed; and, although it was rather late when reaching the shore, I nevertheless succeeded in making a small collection. The forests extended close to the water's edge, and the trees were very high and close together. Rattan, a spiny *Mimosea*, and numerous other creepers, were climbing from tree to tree, and often obstructed the passage; *Nephrodium Nidus-avis*, and several of the same tribe, grew on the trunks and branches; while *Aroideæ*, *Acanthaceæ*, *Filices*, *Scitamineæ*, *Ixoras*, *Piperaceæ*, *Chloranthi*, and many other shade-loving plants, covered the soil, or constituted the underwood. On the whole, however, but few were in flower. *Premna cordifolia*, Roxb., stood on the beach in considerable quantities, bearing whitish blossoms and black drupes, and emitting a most disagreeable odour. Its old name, "Folium hircinum," probably derived from this peculiarity, was certainly no mis-appellation. Of *Orchideæ* not one was to be seen. The most common trees were a *Laurinea*, and the *Cycas circinalis*, Linn. The latter attained a considerable size, being about sixty feet high, three feet in circumference, and diverging towards the top into three, four, and even six branches. *Cycadeæ*, similarly formed, are very frequent, but I have never seen one, either in America or Asia, which had other than simple branches; a subdivision of them does not seem to take place.

That part of Sumatra at which we landed appeared to be but thinly peopled. We only found a single hut occupied by a few Malays. The inhabitants were employed in cooking some fish, and eating a large jack just taken from a neighbouring tree. A few fowls were running about the place, but the whole looked wretched and uncomfortable, and a single glance at the scene would have cured many a European of his romantic notions of Indians and savage life. Mosquitoes, also, were very numerous, and I was glad to find a path which led some distance in the forest, and took me, in a considerable measure, out of their range.

On the next morning, January 16th, the Herald proceeded on her course, and sighting, on the 28th of the same month, the island of Keeling, she entered, on the 6th of March, Simon's Bay, Cape of Good Hope.

(*To be continued.*)

NOTICES OF BOOKS.

GRIFFITH, W., ESQ.: PALMS OF BRITISH EAST INDIA; *in continuation of the "Posthumous papers bequeathed to the Honourable the East India Company, and printed by order of the Government of Bengal."* Calcutta, folio, 1850: arranged by JOHN M'LELLAND, F.L.S., etc.

We have here a further proof of the late Mr. Griffith's untiring zeal in the cause of Botany, and no less of the liberal views of the Bengal Government in aiding the publication of these papers. The work now before us is a rather large folio of nearly 200 pages, accompanied by nearly 150 boldly executed outline plates. There are some elaborate analyses among the figures: but in this family of plants, the author appears to have swerved from his former views of the importance of minute analysis, when he says (p. viii., preface), "Practically I am satisfied that the great end of systematic science, determination or identification, is much more easily attained by bold synthesis, than by minute analysis." The MS., as upon former occasions, seems to be given almost entirely as it proceeded from the pen of the author, except that most of the Latin is translated, and published in the English dress. We lament again to see retained, and printed, some of the hostile and bitter feelings which have so much tended to injure the good fame of Mr. Griffith, and which the editor would have done well, both for his own credit and that of his friend, whom he has in other respects so praiseworthily served, to have consigned to oblivion.

After the characters of the Order *Palmaceæ*, Mr. Griffith has the following suborders:—

I. CALAMINEÆ.—1. Zalacca. 2. Sagus. 3. Calamosagus. 4. Calamus. 5. Plectocomia. 6. Eugeissonia. 7. Mauritia.

II. CORYPHINÆ.—1. Corypha. 2. Livistona. 3. Chamærops. 4. Licuala.

III. ARECINÆ.—5. Areca. 2. Bentinckia. 3. Slackia. 4. Caryota. 5. Arenga. 6. Harina (including *Wallichia*, previously adopted by Griffith, but not here even *alluded* to*).—A genus *Macrocladus* is added, not included in the synoptical tables, and a supplement gives *Cocos flexuosa* and *Ptychosperma appendiculatum.*

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* There is, indeed, at p. 29, a description of "*Calamosagus harinæfolius*" and a figure of "*C. Wallichiæfolius*," with the remark in a note, "The species has been inadvertently named on the plate '*Wallichiæfolius*,' under which name it was first described by the author, Cal. Journ. Nat. Hist. Both names occur indiscriminately in the MSS., and of the two we prefer *harinæfolius*."—ED.

Figures are given of 6 species of *Zalacca*, of which 4 are considered new. *Sagus*, 6 species, all but one of Griffith. *Calamus*, 37 species, nearly all new, according to Griffith's views. *Plectocomia*, 1 of Martius, 3 of Griffith. *Eugeissonia*, 1 of Griff. *Corypha*, 2 of Roxburgh. *Licuala* 6, 4 of Griff. *Livistona* 3, 2 of Griff. *Chamærops*, 1 of Griff. *Phœnix* 3. *Areca*, 9 sp.; 2 of Griff. *Slackia*, 1 of Griff. *Arenga* 3, 2 of Griff. *Caryota* 2, 1 of Griff. *Harina* 3, 2 of Griff. *Macrocladus*, 1 of Griff.

Our readers will be glad to know what have appeared of Mr. Griffith's posthumous works. They are as follows, according to an advertisement printed at Calcutta, at the end of the work we have now been noticing.

1. Private Journals and Travels in India. 1 vol. 8vo. Price Rs. 16.
2. Itinerary Notes (with a map). 1 vol. 8vo. Price Rs. 12.
3. Palms of British India. 1 vol. folio. Price Rs. 50.
4. Icones Plant. Asiaticarum, 4to; and Notulæ ad Plantas Asiaticas.

Part I. Showing development of organs in Phanerogamous plants. Price Rs. 16, uncoloured, including the corresponding part of the Notulæ, amounting to 256 pages, 8vo.

Part II. On the higher Acotyledonous Plants, Notulæ and Icones. Price Rs. 20, coloured; uncoloured, Rs. 16. Part II. of the Notulæ amounts to 380 pages. 8vo.

Part III. Monocotyledonous Plants. This was announced as to have been published in January 1851. Price Rs. 20, uncoloured.

Messrs. Smith and Elder, and Mr. Pamplin, are announced as the agents in London for this work.

ANTONII BERTOLONII *Miscellanea Botanica, VIII.–X.* Bononiæ, 1849–1851.

These three new parts of Professor Bertoloni's 'Miscellanea' have recently reached this country, and contain a continuation of his descriptions and figures of some Alabama plants presented by Dr. Gaves (Gates?) to Prince Canino, and by him handed over to Professor Bertoloni. The most interesting portion, however, of Parts VIII. and IX. consists of illustrations of two or three of the vegetable productions of the Mozambique. The materials in the Professor's hands were received from the Cavaliere Fornasini, a Bolognese, established for some years at Inhambame, in the Mozambique, and carrying on a considerable trade with the Caffres of the interior in elephants' teeth and gold dust. From them he obtained, amongst others, specimens of ebony-wood and of *Mafura*, together with flowering and fruit specimens of the trees which produce them, each of which forms the subject of a dissertation in the work before us. After a lengthened inquiry into the various opinions hitherto entertained of the Ebony-tree of the ancients, Professor Bertoloni proceeds to a detailed botanical description of the tree now ascertained to produce it, as a new genus of *Leguminosæ*, appropriately named *Fornasinia ebenifera*, after the Cavaliere who procured the specimens. Two coloured plates illustrate the botanical characters, and represent a portion of the wood. The genus, one of those which would formerly have been classed under *Robinia* of Linnæus, is, as suggested by the Professor, very closely allied to *Sphinctolobium* of Vogel, and *Neuroscapha* of Tulasne; but a careful study of the figure and description shows that it is still nearer to, and, to our minds, identical with, *Millettia* of Arnott, of which two African species are already published by Hochstetter under the name of *Berebera*, and by Meissner under that of *Millettia*.

The vegetable fat known to the natives by the name of *Mafura*, and the oil called by them *Mutiana*, are extracted from the seeds of a tree named by them *Mafuri*, and by the Portuguese settlers *Mafureiro*. From this name Professor Bertoloni has derived that of *Mafureira oleifera*, which he gives to the tree. He describes it as a new genus of *Sapindaceæ*, allied to *Cupania*. We should rather refer it to *Trichilia*, among *Meliaceæ;* nor can we easily distinguish it as a species from the *Elkaja* of Forskahl, or *Trichilia emetica*, Vahl.

Illustrazioni di PIANTE MOZAMBIGESI; *dal* PROFESSORE GIUSEPPE BERTOLONI. *Dissertazione I.*

This Memoir, read before the Academy of Sciences of Bologna in 1850, but probably printed in 1851, by the younger Bertoloni, is a continuation of his father's interesting illustrations of the vegetable productions of the Mozambique, transmitted by the Cavaliere Fornasini. The subjects treated of are—1. The root *Guibotana*, supplying the principal ingredient of the poison in which the Caffres steep their arrows and lances. The plant is a *Plumbago*, which the Professor thinks may possibly be the *Plumbago Zeylanica*, *β glaucescens*, of Boissier, but certainly specifically distinct from the Linnæan species; he therefore describes and figures it under the name *Plumbago toxicaria*. 2. The mucilaginous fruit *Chirangabua*, much used by the Caffres medicinally, and which is that of the *Pedalium Murex*. 3. *Erythrina hastæfolia*, Bertol. fil., a new species transmitted by the Cavaliere Fornasini on account of its great beauty; it was also gathered by Forbes at Delagoa Bay, on the same coast. 4. The *Mavi* of the Caffres, the poisonous bark of which is used by them as a test in judicial trials. The Cavaliere was himself present on one of these occasions, when both parties died within an hour after taking the poison. Professor Bertoloni describes it (from a pod and leaf only) as a new genus, under the name of *Mavia judicialis*, but it is probably not distinct from the *Cassa*, or judicial plant of the natives of Congo, alluded to by Brown (App. to Tach. Congo) as a species of *Erythrophleum*. 5. The *Guiguetto* of the Caffres, a vegetable butter, not produced on the Mozambique coast, but imported from the interior, from whence also were received the flowering specimens and fruit sent by the Cavaliere Fornasini. Professor Bertoloni, after a detailed discussion, comes to the conclusion that it is identical with the Shea-tree of Park, and thence gives it the name of *Sheadendron butyrosum*. Owing, apparently, to some mistake as to the ovary, which the Professor does not appear to have dissected, he could not refer his plant to any known Natural Order. We should, however, have no hesitation in referring it to *Combretaceæ*, differing only from *Combretum* itself in the absence of any wings to the fruit. Brown has shown that the *Micadania*, or Butter-tree of Soudan, which he considers as identical with the Shea-tree of Park, is undoubtedly a Sapotaceous plant, which G. Don has published as *Bassia Parkii*. There must be, therefore, some error either as to the specimens given by the Caffres to Fornasini, being really those of their Butter-tree, or in the conclusions of Bertoloni as to its identity with the *Shea*.

The materials collected by so zealous an observer as the Cavaliere Fornasini, in the hands of the two active and intelligent Professors of Bologna, may lead to many important results in regard to the numerous little-known vegetable products of the interior of Africa. It is to be hoped, however, that Messrs. Bertoloni will have the means of consulting several of the recently-published works on the subject, to which they do not appear to have had access, and the want of an extensive general herbarium at Bologna renders the identification of plants from tropical countries a matter of great difficulty.

DECADES OF FUNGI; *by the* REV. M. J. BERKELEY, M.A., F.L.S.

Decades XXXVII., XXXVIII.

Sikkim and Khassya Fungi.

(*Continued from* vol. iii. p. 206.)

The four decades now described consist of two sets of Indian Fungi, illustrated, except in one or two instances, by drawings made on the spot. The set marked No. 2 is from Sikkim, No. 3 from Khassya. With scarcely an exception, they are all such species as preserve their characters imperfectly when dried, and of which accurate figures are therefore most desirable. Many, as in the Darjeeling collection, are closely allied to European species; but there is a large proportion of the most splendid productions, with which few of our European Fungi can vie. The present collection contains several species of *Lactarius* and *Cortinarius*, genera which were altogether absent in the first. Figures of a few of the species published in the early portion of this century, which were intended to accompany the text, were by accident obliged to be omitted, and will appear in Sir W. J. Hooker's 'Icones.'

* *Agaricus cæsarius*, Scop. Hook. fil., Ser. 3, No. 30.

HAB. Khassya mountains. 1850.

Rather more graceful than the European form, and with a narrower, but equally thick volva, which, as well as the stem, is yellowish; the gills and ring are white, broadly shaded with yellow. The stem is at first stuffed, then hollow. This, like many other Himalayan Fungi, differs slightly from the European species; but where there are no essential differences, I think it best always to consider them as forms.

* *A. vaginatus*, Bull. Hook. fil., Ser. 3, No. 25, 17.

HAB. Below Nunklow. Khassya, 4000 feet. July 12, 1850.

Pileus dark brown, umbonate. Stem and volva yellowish-brown, paler than the pileus.

A fine variety, but merely a variety of *A. vaginatus*. No. 17 is a paler form, though still with something of the colouring of No. 25.

361. *A.* (Amanita) *fritillarius*, n. s.; pileo plano sicco nitente, maculis nigris variegato; stipite deorsum incrassato griseo virgato; annulo amplo deflexo; lamellis albis postice attenuatis subliberis. Hook. fil., Ser. 3, No. 35.

HAB. Khassya. 1850.

Inodorous. Pileus more than 3 inches across, plane, slightly depressed in the centre, dry, shining, pale grey, variegated with square, black, flat scales, subcarnose. Stem 3½ inches high, ½ an inch thick in the centre, gradually incrassated downwards, bulbous at the base, grey, streaked with darker lines, solid. Ring broad, deflexed, pruinose grey. Gills white, nearly equal, fleshy, brittle, slightly attenuated behind, nearly free.

There is some doubt whether this should be placed in *Lepiota* or *Armillaria;* the gills, however, are not sufficiently attenuated to warrant its being included in the latter section, neither is the habit consonant with that of the former. Its real affinities appear to be with the species of the groupe commencing with *A. magnificus.* It is a very fine and well-marked species.

362. *A.* (Lepiota) *anax*, n. s.; pileo carnoso campanulato latissime umbonato; epidermide contiguo squamulis minutis exasperato; stipite elato bulboso sursum attenuato cavo, initio fibroso-farcto; lamellis pallidis antice latis postice attenuato-attingentibus pallidis. Hook. fil., Ser. 3, No. 23.

Hab. On clay banks, and amongst grass. Nunklow. Khassya. July 10, 1850.

Pileus at first obtusely conical, smooth, springing from a turnep-shaped bulb, which is white, with a little red at the base, and bordered by the swollen edge of the ring; then campanulate, and gradually acquiring a reddish-grey tinge, nearly ¾ of an inch broad, ¾ of an inch high. Stem above 4 inches high, ¾ of an inch thick in the middle, bulbous below, nearly smooth, tinged with very pale pink, stuffed with cottony fibres, clothed at the base for more than half an inch with a thick volva-like coat, which is perfectly distinct from the rest of the stem, and passes completely under it, and is stained with red patches, both externally and internally. Ring still unbroken, and attached to the margin, where it is thick and swollen. Gills pale, pinkish-yellow, quite free, ventricose, regular. As the pileus increases, it assumes an ovate form, and when the ring is ruptured, becomes shortly campanulate, with a very broad umbo, attaining 5 inches or more in diameter, and 3½ in height; the colour is now darker, and the cuticle, though continuous, rough with minute warts and a few scales towards the edge, as is the back of the large apical ring. Stem 12 inches high, about ¾ of an inch thick in the centre, 2 inches at the base, pinkish-grey, fistulose, not sunk into the substance of the pileus. Gills pale, broad in front, attenuated behind, free, but scarcely remote. Substance extremely delicate and spongy. Odour sweet.

One of the most splendid of Agarics, allied to *A. procerus*, but differing in the stem not being sunk into the pileus, its smooth, not scaly surface, the continuous cuticle, which is very minutely warty, and more broadly umbonate, the thick volva-like coat at the base, and other points. In its early stage of growth it resembles very closely some *Amanitæ*.

363. *A.* (Lepiota) *implanus*, n. s.; pileo amplo carnoso convexo floccoso tuberculis gossypinis exasperato; stipite valido clavato; annulo amplo fugaci; lamellis latis ventricosis liberis. Hook. fil., Ser. 3, No. 33.

HAB. On dry stony hills. Moflong. Khassya. Aug. 3, 1850.

Odour sweet. Pileus 5 inches across, dry, convex, subcampanulate, extremely fleshy in the centre, soft, floccose, rough, except towards the margin, with cottony tubercles. Stem 4 inches high, 1½ inch thick, obese, but not truly bulbous, even, not warty. Veil very broad, attached to the top of the stem, fugacious. Gills broad, ventricose, free.

A magnificent species, allied to *A. Vittadini*. I once found a single specimen of a very similar Agaric on a bank of earth in Northamptonshire, but, unfortunately, neither drawing nor description was secured.

* *A. laccatus*, Scop. Hook. fil., Ser. 2, No. 22.

HAB. In pine-woods. Sikkim, 11,000 feet. 1849.

The specimens are evidently young. They are inodorous, dry, firm, and pulverulent, and the stem has a few rigid fibres, or fascicles of threads, which separate from it. The gills are adnato-decurrent. The colour is exactly that of *A. laccatus*, with which species I believe the plant is clearly identical. In fact, the figure resembles very strongly Schæff. t. 223.

* *A. maculatus*, Alb. and Sch. Consp. p. 186. Hook. fil., Ser. 2, No. 1.

HAB. In pine-woods. On *Abies Smithiana*. Lachen, 9,000 feet. May 30, 1849.

There is a slight difference between the Himalaya specimens and the European. In both the stem is white, attenuated at the base, hollow, and spotted with red when rubbed or injured; in both the pileus is very fleshy, and the gills narrow, crowded, and free; but in the former the tint of the pileus is of a more uniform ochraceous tinge, as is also the flesh of the pileus, as far as the origin of the gills, and beyond the point to which the cavity of the stem extends; the gills have a pale pinkish tinge here and there, and the stem itself is nearly equal, except at the base, where it is smooth, and not cottony. These differences indicate a distinct variety, but are not sufficient to justify the proposition of a new species.

* *A. velutipes*, Curt. Hook. fil., Ser. 2, No. 25.

Hab. In pine-woods. Sikkim, 11,000 feet. 1849.

364. *A.* (Collybia) *blandulus*, n. s.; pileo hemisphærico carnosulo sicco, margine striato stipiteque solido flexuoso pruinato-tomentosis; lamellis distantibus latis postice rotundato-adnexis. Hook. fil., Ser. 2, No. 8.

Hab. In pine-woods. Sikkim, 11,000 feet. 1849.

Pileus about ½ an inch broad, hemispherical, obtuse, dry, white with a pinkish tinge, pulverulent, slightly fleshy, rather firm. Stem 1¾ inch high, flexuous, sometimes remarkably so, not a line thick, of the same colour as the pileus, and, like that, pruinate-tomentose, solid. Gills distant, rather broad, rounded behind, adnexed, scarcely truly adnate, white. Inodorous.

Evidently allied to *A. alumnus*, and certainly undescribed.

365. *A.* (Collybia) *dryophilus*, Bull. Hook. fil., Ser. 2, No. 34. Var. *cæspitis*.

Hab. Amongst grass, moss, etc. Lachen, 14–16,000 feet. July 18, 1849.

The specimens have exactly the habit of *A. xanthopus* or *A. succineus*, but with the narrow gills and characters of *A. dryophilus*. There is not the slightest trace of any umbo, but the pileus is plane, or slightly depressed.

366. *A.* (Collybia) *macer*, n. s.; pileo primitus subcampanulato obtusissimo demum expanso late conico-umbonato rufescente viscidulo; stipite macro flexuoso procero glabro; lamellis pallidis subadnatis postice rotundatis, interstitiis rugosis. Hook fil., Ser. 2, No. 5.

Hab. In pine-woods, on the ground. Sikkim, 11,000 feet. 1849.

Pileus at first shortly subcampanulate, obtuse, at length expanded with a broad, obtusely conical umbo, about 1 inch across, subcarnose, slightly viscid, light rufous, rather carnose; margin thin; substance pale rufous. Stem 4½–5 inches high, ¾–1¼ line thick, rufous like the pileus, smooth, fistulose, rooting at the base. Gills pale, moderately broad, slightly ventricose, rounded behind, subadnate. Odour faint, sweet.

Allied to *A. dryophilus*, but with a very different habit. A section of the pileus, when expanded, represents a very short, obtuse cone.

* *A. purus*, Pers. Hook. fil., Ser. 2, No. 28.

Hab. In pine-woods. Sikkim, 11,000 feet. 1849.

Dr. Hooker describes his plant as inodorous, in which character alone it recedes from the European species.

* *A. galericulatus*, Scop. Hook. fil., Ser. 2, No. 6.

Hab. In pine-woods. Sikkim, 11,000 feet. 1849.

"Stem firm, odour faint." The figure and notes agree exactly with *A. galericulatus*. The interstices of the gills are connected by veins towards the margin only, especially in the larger specimens.

367. *A.* (Mycena) *colligatus*, n. s.; cæspitosus; pileo hemisphærico striato carnosulo sicco; stipitibus deorsum tomento colligatis; lamellis angustis arcuatis decurrentibus venoso-connexis albidis. Hook. fil., Ser. 2, No. 7.

Hab. In pine-woods. Sikkim, 11,000 feet. 1849.

Pileus $\frac{3}{4}$–1 inch broad, hemispherical, obtuse, deeply striate, dry, pale pinkish-grey. Stems 3 inches or more high, not a line thick, flexuous, darker than the pileus, connected into a compact mass below by downy fibres, smooth, fistulose. Gills rather narrow, arcuate, decurrent, nearly white, connected by veins. Odour faint, sweet. Substance brittle.

Allied to *A. myriadeus*, but differently shaped, without any trace of an umbo, and with few narrow and truly arcuate decurrent gills; like that, it has a dry pileus, which at once distinguishes it from *A. tintinnabulum*.

368. *A.* (Mycena) *discordis*, n. s.; albidus; pileo profunde umbilicato carnoso glabro, margine striato; stipite subæquali fistuloso; lamellis latiusculis adnato-decurrentibus postice obtusis; interstitiis venosis. Hook. fil., Ser. 2, No. 4.

Hab. In pine-woods, on wood. Sikkim, 11,000 feet. June 16, 1849.

Dirty white. Pileus nearly 2 inches broad, deeply umbilicate, with the margin nearly plane, subcarnose, except at the extreme edge; dry, smooth, strongly striate. Stem $2\frac{1}{4}$ inches high, $\frac{1}{4}$ of an inch thick, slightly thickened at the tomentose base, otherwise nearly equal, flexuous, smooth, fistulose. Gills rather broad, adnate, decurrent, but rounded at the extreme base; interstices venose. Odour faint.

This is evidently a *Mycena*, but the pileus is strongly umbilicate. The peculiar form of the gills will not allow of its being placed in *Omphalia*, and the nature of the stem excludes it from *Pleurotus* and *Clitocybe*, from the latter of which it is removed by its ligneous habitat.

369. *A.* (Mycena) *incommiscibilis*, n. s.; pileo conico subcarnoso lævi; carne fuliginea; stipite elongato deorsum incrassato; lamellis ventricosis postice attenuatis adnatis pallido-flavis. Hook. fil., Ser. 2, No. 11.

HAB. In pine-woods. Sikkim, 11,000 feet. 1849.

Dry, inodorous, brittle. Pileus scarcely ¾ of an inch broad, conical, ochraceous, scarcely striate, subcarnose. Stem 4 inches high, 1½ line thick, incrassated below, where there are a few rooting fibres, fistulose, nearly white. Gills ventricose, attenuated behind, adnate, shaded with yellow.

This clearly belongs to the same section with *A. metatus*, but it is inodorous. I cannot point out any species to which it bears a very close affinity.

370. *A.* (Mycena) *dentosus*, n. s.; pileo sicco campanulato umbonato pulverulento sericellove, margine striato laciniato dentato; stipite elongato deorsum incrassato; lamellis latis adnatis incarnatis acie candida undulata. Hook. fil., Ser. 3, No. 29.

HAB. In pine-woods. Sikkim, 11,000 feet.

Dry, brittle; odour faint. Pileus ¾ of an inch broad, campanulate, umbonate or subacute, greyish-green, pulverulent or slightly sericeo-striate. Stem 3–4 inches high, scarce a line thick, more or less curved, dirty white, incrassated below and tomentose, fistulose. Gills broad, ventricose, adnate, flesh-coloured, with a broad white margin, which is undulated.

A well marked species, to which I can point out no very near ally. It is intermediate between the groupes *Fragilipedes* and *Filopedes* of Fries's 'Epicrisis.'

371. *A.* (Mycena) *puberulus*, n. s.; pileo late campanulato obtuso griseo sericello; stipite gracili deorsum incrassato; lamellis latiusculis postice rotundatis subliberis. Hook. fil., Ser. 2, No. 19.

HAB. In pine-woods. Sikkim, 11,000 feet. 1849.

Dry, inodorous; delicate. Pileus ½ an inch broad, campanulate, obtuse, grey, minutely silky. Stem 2 inches high, scarce a line thick, inincrassated below, downy at the base, fistulose. Gills rather broad, nearly equal, slightly rounded behind, nearly free, or only adnexed, of a delicate pink. Spores subelliptic, about $\frac{1}{5000}$ of an inch long.

This is undoubtedly allied to *A. filopes*, but the silky appearance of the pileus forbids its being united to it. The gills too are very peculiar, being nearly equal throughout.

372. *A.* (Mycena) *flavo-miniatus*, n. s.; pileo e campanulato subhemisphærico pulcherrime miniato subpulverulento; stipite filiformi longissimo flexuoso luteo; lamellis ventricosis adnexis alutaceis. Hook. fil., Ser. 2, No. 26.

HAB. In pine-woods, on sticks. Sikkim, 11,000 feet. 1849.

Pileus ½ an inch broad, at first campanulate, then nearly hemispherical, not the least umbonate, dry, subpulverulent, flesh thin, of the colour of the pileus, vermilion, sometimes yellow at the apex; flesh thin, of the colour of the pileus. Stem filiform, yellow, flexuous, 5 inches high, fistulose, brittle, downy at the base. Gills ventricose, attenuated at the base and adnexed, pale tan.

This species is much larger than *A. acicula*, which it strongly resembles, and of which it can scarcely be considered a gigantic form, though I scarcely know how to point out any distinctive characters. The pulverulent surface of the pileus, and the long, very flexuous stem, are perhaps the most important. It does not retain its beautiful tints when dry.

* *A. epipterygius*, Scop. Hook. fil., Ser. 2, No. 9.

HAB. In pine-woods. Sikkim, 11,000 feet. 1849.

The figure represents exactly *A. epipterygius*, but the note appended to the solitary specimen indicates that it is dry and inodorous. The species is, however, extremely variable, and I have, therefore, no hesitation about the correctness of the name.

A form also from pine-woods at the same altitude, is represented in fig. 10 of the same collection, which is very viscid, and varies with a yellow and red stem, and a dark pileus, the flesh of which is reddish.

No. 17 is apparently a small form of the same species.

All agree exactly in the shape and sculpture of the pileus, and the gills differ very little.

373. *A.* (Mycena) *macrothelus*, n. s.; pileo campanulato umbonato, centro carnoso, margine sulcato; stipite luteo flexuoso fistuloso; lamellis adscendentibus adnexis incarnatis. Hook. fil., Ser. 3, No. 19.

HAB. Amongst moss. Myrong woods, Khassya. July, 1850.

Moist, brittle. Pileus ½ an inch across, 5 lines high, campanulate, very strongly umbonate, flesh-coloured; border sulcate; flesh very thick in the centre, of the same colour as the pileus. Stem nearly 2 inches high, scarce a line thick, flexuous, fistulose, nearly equal, yellow. Gills ascending, very narrow, but slightly ventricose, attenuated behind, adnexed, flesh-coloured.

A very pretty species, allied to *A. epipterygius.*

* *A. umbelliferus*, L. Hook. fil., Ser. 2, No. 18.

HAB. In pine-woods. Sikkim, 11,000 feet. 1849.

An ivory-white form.

374. *A.* (Omphalia) *ranunculinus*, n. s.; luteus; pileo hemisphærico; stipite incurvo deorsum velutino; lamellis planis adnatis. Hook. fil., Ser. 2, No. 35.

HAB. On turf, etc. Lachen, 14–16,000 feet. July 19, 1849.

Egg-yellow, dry, rather tough. Pileus ¾ of an inch across, subhemispherical, convex, obtuse, even, thin. Stem 1 inch high, 1 line thick, curved, solid, velvety below. Gills adnate, subdecurrent, plane, distant; interstices nearly even.

This is undoubtedly very nearly allied to the yellow form of *A. umbelliferus*, but the pileus is hemispherical, and by no means plane or turbinate, with the habit of some small *Flammula.*

375. *A.* (Omphalia) *radiatilis*, n. s.; stramineus; pileo subcarnoso depresso pulverulento; stipite solido æquali flexuoso elongato; lamellis triquetris, apicibus radiantibus. Hook. fil., Ser. 2, No. 24.

HAB. In pine-woods. Sikkim, 11,000 feet.

Inodorous, rather tough, straw-coloured. Pileus 1 inch broad, dry, subcarnose, depressed or rather umbilicate, pulverulent; margin strongly striate. Stem 2½ inches high, flexuous, nearly equal, solid. Gills broadly adnate, decurrent, sending off little radiating processes from their extremities.

This resembles the yellow form of *A. umbelliferus*, but is a larger species and the radiating appearance at the tips of the gills is remarkable. This, however, is present only in older specimens.

376. *A.* (Pleurotus) *placentodes*, n. s.; pileo orbiculari sublobato obovato glabro hygrophano pallide ochraceo; stipite fere obsoleto; lamellis latiusculis utrinque attenuatis. Hook. fil., Ser. 2, No. 16.

HAB. On birch-wood. Sikkim, 11,000 feet.

Pileus orbicular or obovate, slightly lobed, 2–2½ inches across, convex, moist, pale ochraceous, darker when dry; flesh moderately thick. Stem nearly obsolete, though the margin of the pileus is visible all round. Gills attenuated at either end, dirty white, here and there branched or anastomosing.

This species has the habit of *A. salignus*, but is smaller. It resembles *A. ninguidus*, but has not the same snow-white pileus, and is not imbricated. The gills as well as the pileus, in some specimens, assume a tawny tinge when dry.

377. *A.* (Pluteus) *cuspidatus*, n. s.; pileo campanulato cuspidato-umbonato longitudinaliter rugoso carnoso, stipiteque elongato deorsum incrassato e farcto cavo fuligineis; lamellis albis ventricosis. Hook. fil., Ser. 3, No. 27.

HAB. On the ground. Khassya mountains.

Pileus $\frac{3}{4}$ of an inch broad, 1 inch high, campanulate, with a long pointed umbo, deeply and repeatedly rugose, but not striated, dark fuliginous; flesh very thick in the centre, nearly $\frac{1}{3}$ of an inch, moderately so towards the margin, which is not at all involute. Stem above 3 inches high, $\frac{1}{4}$ of an inch thick, at first stuffed, then hollow, dark like the pileus, much paler within. Gills white, ventricose, rounded behind, free.

This singular species has somewhat the habit of *A. cystopus*. The pileus is rugose, like that of *A. phlebophorus*. I have seen no specimen of this, but the drawing is exceedingly characteristic.

378. *A.* (Entoloma) *euthelus*, n. s.; pileo e conico expanso fortissime umbonato fuligineo, margine tenui; stipite subæquali elongato flexuoso fistuloso pallide violaceo; lamellis adnexis. Hook. fil., Ser. 2, No. 15 (pro parte).

HAB. In pine-woods. Sikkim, 11,000 feet.

Moist, brittle, inodorous. Pileus about two inches across, expanded, with a very prominent mammæform umbo, round which it is rather depressed, dark fuliginous-brown; margin abruptly thin. Stem $3\frac{1}{2}$ inches high, $\frac{1}{4}$ of an inch thick, pale violet, hollow. Gills ascending, rather attenuated behind, adnexed. Spores irregular, strongly toothed, about $\frac{1}{1500}$ of an inch long.

Allied to *A. rhodopolius*, but amply distinguished by its more delicate habit, slender, hollow, violet stem, and other points. The stem is by no means distinct from the dark flesh of the pileus, nor are the gills at all ventricose.

* *A. Lazulinus*, Fries, Ep. p. 153. Hook. fil., Ser. 2, No. 3.

HAB. In pine-woods. Sikkim, 11,000 feet.

I cannot quite satisfy myself about this species, of which only a single specimen has been preserved. The drawing represents it as hemispherical, very slightly umbilicate, even, moderately fleshy, of a lilac-blue. Stem shining, darker than the pileus, fistulose, with a darker-coloured cartilaginous coat. Gills pale lilac, inclining to pink, broad and ventricose in front, attenuated behind, and adnexed, but scarcely adnate. Spores $\frac{1}{4500}$ of an inch in length, obovate, nearly regular, with a large nucleus. Smell scarcely any.

It certainly comes nearer to *A. Lazulinus* than any other species, but in the absence of information as to the primitive colour of the gills, I can neither be quite certain as to its identity nor warranted in proposing it as new.

379. *A.* (Flammula) *phlegmaticus*, n. s.; fragilis; pileo carnoso expanso pallide umbrino viscosissimo, carne umbrina; stipite incurvo concolore sursum pallidiore cavo; lamellis pallide alutaceis adnatis postice attenuatis. Hook. fil., Ser. 2, No. 21.

HAB. In pine-woods. Sikkim, 11,000 feet.

Inodorous. Pileus two inches across, extremely viscid, shining, brittle, carnose, plane, sometimes depressed without any trace of an umbo, sometimes broadly umbonate; flesh of the same colour as the pileus. Stem incurved, 2 inches or more high, darker below, slightly fibrillose, not scaly, hollow, yellow within. Gills moderately broad, adnate, slightly rounded behind and ending in a little point or slightly attenuated. Spores subelliptic, about $\frac{1}{4000}$ of an inch long.

This is nearly allied to *A. lentus*, but differs in many characters from that and the species which follow it in the 'Epicrisis.' It is not tough, and has not a scaly stem like *A. lentus*, in which latter character it differs from *A. mixtus*. The flesh is not white as in *A. lubricus* and *A. lupinus*, and other characters might be adduced of more or less importance. As to its affinities there is no doubt.

* *A. flavidus*, Schæff. Hook. fil., Ser. 2, No. 12.

HAB. In pine-woods. Sikkim, 11,000 feet.

The specimens accord in colour, in the nature of the gills, and in general habit, though somewhat smaller than Schæffer's figure; at any rate their affinity is very close. Dry, inodorous, rather fine. Pileus slightly umbonate; flesh yellow like the pileus, with a tawny tinge near to the cuticle. Stem at length hollow, yellow, then brownish, with traces of a veil at first. Gills broad, pale, adnate. Spores $\frac{1}{5000}$–$\frac{1}{4500}$ of an inch long.

The lower portion of the stem was not preserved.

380. *A.* (Naucoria) *micromegas*, n. s.; pileo convexo subcampanulato valde carnoso; stipite incurvo e mycelio orbiculari oriundo; lamellis latis postice rotundatis liberis alutaceis. Hook. fil., Ser. 3, No. 15.

Hab. On dead wood. Myrong. Khassya. July 6, 1850.

Inodorous. Pileus dry, rather tough, $\frac{3}{4}$ of an inch across, convex, subcampanulate, very fleshy, dull tawny ochre; margin incurved. Stem 1 inch high, 1 line thick, of the same colour as the pileus, solid, springing from an orbicular mycelium. Gills very broad, tan-coloured, rounded behind, affixed.

This curious species is closely allied to *A. horizontalis*. It is singularly fleshy for so small a species.

(*To be continued.*)

Contributions to the Botany of Western India; *by* N. A. Dalzell, Esq., M.A.

(*Continued from* vol. iii. p. 346.)

Nat. Ord. SAMYDEÆ.

Casearia (Anavinga).

1. C. *graveolens;* arborea, glabra, foliis breve petiolatis late ellipticis breve acuminatis leviter obtuseque serratis planis, adultis coriaceis duris, junioribus herbaceis utrinque nitentibus, stipulis lanceolatis acuminatis glabris, floribus numerosis axillaribus glomeratis, pedicellis supra basin articulatis floriferis brevissimis fructiferis elongatis. *Calyx* 5-partitus, foliolis rotundatis concavis viridibus extus puberulis. *Stamina* 8, calycem æquantia, squamis alternantibus acutis penicillatis. *Stylus* longiusculus, staminum longitudine. *Filamenta* glabra. *Stigma* capitatum. *Folia* cum petiolo semipollicari 6–8 poll. longa, 3–4 lata. *Stipulæ* 4 lin. longæ. *Fructus* oblongus, subteres, glaber, nitidus, pollicaris. *Semina* circiter 12, ovata, acuta. *Embryo* inversus, albuminis totam longitudinem occupans; radicula elongata, cylindrica; cotyledones ovales, foliaceæ, planæ.—Crescit in collibus apertis Concani australioris; fl. temp. pluviali.

This is a small tree, with a stem not more than six inches in diameter: the young shoots are obtusely angular, and the flowers have a heavy and disagreeable odour.

2 C. *lævigata;* fruticosa, 4-pedalis, glabra, foliis breve petiolatis oblongis acuminatis obscure serratis vel subintegris subcomplicatis coriaceis margine revolutis utrinque nitentibus, stipulis acuminatis glabris, floribus numerosis axillaribus glomeratis, pedicellis supra basin articulatis.

Calyx 5-partitus, foliolis rotundatis concavis viridibus extus *glabris*. *Stamina* 8, squamis alternantibus subæquilongis acutis penicillatis. *Stylus nullus*, filamenta glabra. *Stigma* capitatum, in ovario conico sessile. *Folia* cum petiolo (4–5 lin.) 5–8 poll. longa, 2–3 poll. lata. *Stipulæ* 2 lin. longæ, margine lacerato.—Crescit prope mare in Concano australiore; fl. Junio et Julio.

The bark on the young branches of this shrub is white, and highly polished. The smell of the flower is not disagreeable. The fruit has not yet been seen.

3. C. *rubescens;* fruticosa, 4–6-pedalis, tota glabra, foliis petiolatis ovato-oblongis *integerrimis* basi rotundatis apice subito obtuseque acuminatis coriaceis marginibus recurvis, *petiolis foliisque junioribus costa rubris.*

Calyx 5-partitus, foliolis rotundatis concavis luteo-albis margine ciliolatis. *Stamina* 8, calyce breviora, squamis crassis truncatis alternantibus longiora; squamæ filamentaque pilosa. *Ovarium* conicum. *Stigma* sessile, discoideum. *Fructus* oblongus, glaber, annulo insidens. *Semina* pauca, 6–8. *Folia* cum petiolo semipollicari 4–4½ poll. longa, 2 poll. lata, subcomplicata. *Stipulæ* minutæ, rufæ, glabræ, squamæformes.—Crescit in montibus Syhadree, lat. 15°; fl. Feb.

The only species of this genus which Roxburgh has described with entire leaves is his *C. esculenta*, which is also a hill species, but the description is so meagre that I am unable to say whether it differs from that now under consideration. There is a great uniformity throughout the Indian species of this genus. Roxburgh mentions the position of the embryo as very variable, but I have not found it so in the species I have examined, and in two, at least, it occupies the whole length of the seed. Endlicher has described the embryo as orthotropous, but in *C. ovata*, Willd., and *C. graveolens* (nobis), I find it just the contrary, or antitropal. I may add, that I believe *C. ovata*, and *C. tomentosa*, Roxb.,

to be but one species. The perigonium, instead of being caducous, as stated by the founder of this genus, often increases with the fruit.

Nat. Ord. LABIATÆ.

MARRUBIUM.

M. *Malcolmianum;* herbaceum, ramis elongatis simplicibus gracilibus villosis, foliis parvis breve petiolatis ovatis obtusis crenatis utrinque pubescentibus, floralibus conformibus minoribus acutioribus, verticillastris bifariis distantibus dichotomo-cymosis subumbellatim contractis pedunculatis paucifloris (8–10) folia floralia æquantibus vel superantibus, pedicellis pedunculo (3 lin.) brevioribus, bracteis linearibus acutis ciliatis calycem æquantibus.

Rami pedales. *Folia* distantia, majora, cum petiolo bilineari 8–9 lin. longa, 5 lin. lata, grosse crenata, utrinque pilis articulatis complanatis subtus glandulis conspersa. *Calyx* obscure bilabiatus, 1 lin. longus, hispidus, 10-nervius, fauce pilosus, 5-dentatus, dentibus subulatis rigidis erectis ciliatis tubo duplo brevioribus. *Corollæ* tubus exannulatus, cylindricus, calycis longitudine; limbi bilabiati labium superius planum, breviter bifidum, lobis truncatis, inferius 3-plo longius, tubum æquans, 3-lobatum, lobis rotundatis, intermedio majore emarginato. *Semina* ovali-oblonga, glabra, minute reticulata. *Antheræ* ovales, perfectæ, loculi subdivaricati; *filamenta* brevia, glabra. *Stylus* brevis; stigmatis lobi brevissimi, æquales, obtusiusculi.—Crescit in ripa fluminis "Yena," prope sanatorium Malcolmianum, in montibus Syhadree, alt. 4000 ped.; fl. Martio et Aprili.

This is entitled to be called East Indian Peppermint, being possessed of all the aromatic and carminative qualities of the *Mentha piperita.* The inside of the lips of the corolla are velutino-papillose, and there are two rows of singular hairs, like collapsed tubes, down the palate and throat, as in the corolla of several *Asclepiadeæ.*

Nat. Ord. EBENACEÆ.

DIOSPYROS.

1. D. *paniculata;* arborea, ramis glabris, foliis lanceolato-oblongis apice obtuse acuminatis basi rotundatis breve petiolatis coriaceis glabris, *floribus masculis* in foliorum delapsorum axillis paniculatis numerosis, paniculis folio brevioribus cum pedicellis gemmisque

fuliginoso-velutinis, calycis 5-partiti ventricosi laciniis foliaceis reticulato-venosis late ovalibus obtusis intus calloso-carinatis marginibus alatim reflexis, corolla tota extus fuliginoso-velutina calyce duplo longiore tubo 5-gono apice constricto, limbi 5-partiti laciniis oblongis obtusis intus glabris æstivatione contortis sub anthesi reflexis tubum æquantibus, floribus fœmineis lateralibus solitariis, pedicellis petiolum semipollicarem æquantibus, calyce fœmineo ut in masc. cum fructu valde increscente, fructu ovato styli vestigiis coronato densissime fuliginoso-tomentoso calyce ampliato incluso.

Folia arboris masc. multo minora, 4 poll. longa, 15–18 lin. lata. *Folia* arboris fœm. 9–10 poll. longa, 3 poll. lata, utrinque minute reticulata. *Flores* masc. 10 lin. longi. *Stamina* 20, per paria unita, corollæ tubo paulo breviora; *antheræ* lineares, apice mucronatæ.—Crescit in montibus Syhadree, prope Chorla-ghât; fl. temp. frigido.

2. D. *pruriens;* ramulis molliter hirsutis, foliis anguste oblongis acuminatis basi obtusis brevissime (1 lin.) petiolatis utrinque hirsutis, floribus masculis in pedunculo axillari petiolo 3-plo longiore geminis, pedicellis basi articulatis, floribus fœmineis axillaribus et lateralibus approximatis solitariis brevissime (1 lin.) pedicellatis.

Calyx masc. 4-partitus, laciniis lineari-oblongis obtusis utrinque pilosis corollæ tubum æquantibus. *Corolla* masc. extus tomentosa, 9 lin. longa, limbi 4-partiti laciniæ tubi longitudine. *Stamina* 14, omnia basi connata, ovarii rudimentum pilosum cingentia. *Calycis* fructiferi laciniæ reflexæ, non increscentes. *Fructus* 4-locularis, ovato-conicus, *pilis fulvis prurientibus* densissime vestitus, cerasi majoris magnitudine. *Folia* 3–3½ poll. longa, 12–15 lin. lata. *Stylus* ex vestigiis bifidus videtur, ramis apice bilobis? An potius *Gunisanthi* species?—Crescit cum præcedente.

3. D. *nigricans*, nob. (non Wall. list. 6351); floribus 4-meris, stam. 26, foliis oblongis vel lanceolatis acuminatis *membranaceis* glabris cum petiolo bilineari 4 poll. longis 1½ poll. latis, floribus masculis ternis in apice pedunculi brevissimi sessilibus, calycis villosi 3-linearis tubo turbinato, limbi 4-partiti laciniis ovatis acutis ciliatis planis patentibus tubo sublongioribus, corollæ glabræ tubo brevi (1 lin.), laciniis angustis linearibus tubo 3–4-plo longioribus.

Stamina 26, glabra; filamenta inæqualia, gemina vel terna vel quaterna, medio ovarii rudimentum glabrum, apice 4-divisum. Fl. fœm. et fructum non vidi.—Crescit cum præcedente.

The whole plant turns black in drying.

4. D. *Goindu;* floribus tetrameris, stam. 16, foliis ovato-oblongis basi truncato-rotundatis apice obtusiusculis glabris breve (2 lin.) petiolatis, floribus masculis ternis in pedunculo axillari petiolum æquante, floribus fœmineis axillaribus solitariis.

Calyx masc. 4-partitus, foliolis rotundatis glabris corollæ tubo duplo brevioribus. *Corolla* 5 lin. longa, glabra, urceolata, limbi segmentis 4 rotundatis tubo ventricoso paulo brevioribus. *Stamina* 16, filamentis brevissimis geminatis, antheris subulato-acuminatis. *Ovarii* rudimentum carnosum, apice 4-fidum, lobis acutis dentiformibus. *Calyx* fœm. basi bibracteolatus. *Stylus* brevissimus; stigmata 4, apice leviter bifida. *Fructus* globosus, cerasi magnitudine.—Crescit in montibus Syhadree; fl. Aprili—Junio.

D. *montanæ*, Roxb., affinis, sed differt calycis lobis obtusis, racemis petiolum nunquam superantibus, paucifloris.

Nat. Ord. ORCHIDEÆ.

ERIA.

E. *uniflora;* pseudo-bulbis sphæricis depressis apice diphyllis, foliis oblongis planis basi angustatis complicatis, scapo gracili foliorum longitudine apice unifloro, sepalis lateralibus falcatis acutis, sepalo supremo petalisque subæqualibus linearibus acutis, labello petalis breviore, lobis lateralibus abbreviatis lunatis purpureo-marginatis lobo intermedio lineari obtuso intus longitudinaliter bicristato.—Fl. temp. pluviali.

This pretty species grows in clusters on the bark of the Mango and other trees; the flower is white and very large for the size of the plant, viz., two inches across. The pollinia are eight in number, wedge-shaped, and united by threads at their narrow end; the leaves are one and a half to two inches long, and the scape about the same length, and furnished at its base with a keeled obtuse linear sheath.

DENDROBIUM. (Sp. *Pseudo-bulbosæ.*)

D. *crispum* (nobis); foliis serotinis paucis lineari-lanceolatis subcomplicatis, floribus racemosis 6–10, ovario florem æquante basi bractea parva scariosa suffulto, sepalis petalis brevioribus supremo lineari-lanceolato obtusiusculo lateralibus subfalcatis, petalis spathulatis, labello sepalis breviore 3-lobato, lobis 2 erectis acutis, intermedio

truncato margine irregulariter crenato albo roseo-maculato basi cornubus 2 erectis acutis prædito, columna utrinque apice breviter cornuta.

Tota 4–5 poll. alta, floribus albis, labio excepto.—Crescit in arboribus ubique; fl. temp. frigido.

The pseudo-bulbs of this very common plant are small, button-shaped, and green, with a white network over them; the peduncle is delicate, filiform, purple, two and a half to three inches long, glabrous and smooth, with tubular sheaths. The fruit is oval, shining, four lines long. Lindley has sixteen species of this section in his "genera and species," but not one from Continental India, where they are plentiful.

Since writing the above I have received vol. v. part i. of Wight's 'Icones,' which is just published, and I find the two Orchids just described figured in it; the former as *Eria reticosa,* R. W., no. 1637, and the latter as *Dendrobium humile,* R. W., no. 1643. Wight's *Dendrobium filiforme,* no. 1642, was published in this Journal in vol. iii. p. 345, as *D. microchilos* (nobis). Several Orchids, to which Wight has given *new names,* have been already named and figured, both in the 'Botanical Magazine' and in the 'Annales des Sciences Naturelles,' 2nd series, vol. xv., by Richard. *Habenaria peristyloides,* R. W., no. 1702, does not belong to the genus, but is a most characteristic species of *Cœloglossum, C. luteum,* nobis, in this Journal, preceding volume. *Habenaria Jerdoniana,* R. Wight, no. 1715, has been named and described by me as *H. diphylla* in the same place. *Cheirostylis flabellata,* R. W., no. 1727 of the 'Icones,' is the *Goodyera flabellata* of Richard, in the work already mentioned. *Sarcanthus pauciflorus,* R. W., no. 1747, is a very poor drawing of the plant described by me last year as *S. peninsularis,* and of which I sent you a coloured drawing.

Nat. Ord. LEGUMINOSÆ.

Cassia (Chamæsenna).

C. *Goensis;* arborea, inermis, fulvo-tomentosa, ramulis angulatis, foliis pinnatis, foliolis oblongis obtusis 10–12-jugis, petiolo eglanduloso, stipulis acuminatis adnatis et uno latere irregulariter productis, racemis axillaribus solitariis folio brevioribus, pedicellis fructiferis pollicaribus, legumine complanato lineari mucronato multiloculari

basi (ovulis abortivis) angustato, seminibus perfectis 6–12 ad hilum angustatis.

Folia 4 poll. longa; foliola pollicaria, 4–5 lin. lata; petiolus infra foliola brevissimus. *Legumen* 2–3 poll. longum, 6 lin. latum; ovula 18–20, quorum semper 8–12 basin versus abortiva. *Flores* non vidi.—Crescit rarissime in provincia Goensi, ad pedem jugi Syhadrensis. Fructum maturum reperi mense Aprili.

This is a small tree not unlike the *Agati;* it is called by the few natives who are acquainted with it "*Looratee.*" At the time of discovery the leaves were all young, and covered on both sides, but particularly the underside, with yellow and fulvous hair.

Nat. Ord. AROIDEÆ.

TYPHONIUM.

T. *bulbiferum;* 5–6-unciale, foliis 2 cordato-hastatis mucronulatis mistinerviis subtus nitentibus longe petiolatis, petiolis folio triplo longioribus striatis *apice bulbiferis.*

Scapus ex folii basi vaginante petiolo triplo brevior, solitarius. *Spatha* anguste linearis, apicem versus alternata, hyalina, pallide rosea, inferne tumida, convoluta, superne plana, patens. *Spadix* spathæ æquilongus, filiformis, attenuata, pallide flava, 5 poll. longa, folia æquans. *Antherarum* sessilium loculi subsphærici, poro simplici terminali dehiscentes. *Pollen* hispidus, roseus. *Stylus* nullus; stigma annulatum, papillosum, ovarii apicem cavum cingens; ovaria pauca, 15–20, biserialia, obconica, unilocularia, ovulum unicum erectum stipitatum fundo affixum. Genitalia rudimentaria supra ovaria carnosa colorata (flava), uniserialia, acinaciformia, patentia. *Tuber* pisi magni magnitudine, cylindricus, basi truncatus.—Crescit in Concano australiore; fl. Junio.

The bulb, or more properly tuber, produced on the apex of the petiole, sufficiently distinguishes this species from all hitherto described. This tuber is about two lines in diameter, dark-coloured outside, solid, and white internally, and no doubt capable of reproducing the species, like those on the leaf of *Ledebouria hyacinthina.* The genus *Pinellia* also produces bulbs on the petioles.

Nat. Ord. LYCOPODIACEÆ.

LYCOPODIUM.

1. L. (Selago) *empetrifolium;* caule tereti pendulo dichotomo, foliis

undique insertis omnibus similibus confertis linguæformibus obtusis carnosis rigidis glabris 6–7 lin. longis 1–1½ lin. latis petiolatis, petiolo brevissimo contorto, capsulis axillaribus solitariis reniformibus glabris.—Crescit in arboribus rupibusque Concani australioris; rara.

2. L. *miniatosporum;* caule erecto dichotomo ramoso, foliis distichis patentibus oblique ovatis obtusis inæquilateris integris, stipulis alternis lanceolatis setaceo-acuminatis, spicis terminalibus compressis secundis squamosis solitariis vel geminis, capsulis squamisque dimorphis, capsulis lateralibus cylindricis minutisporis, intermediis obtuse triangularibus 4-sporis, squamis marginalibus distichis imbricatis carinato-falcatis acutis, intermediis adpressis biserialibus imbricatis alternis orbiculatis setaceo-acuminatis.—Crescit ubique in umbrosis, tempore pluviali.

3. L. *cæspitosum;* caule tereti radicante dichotomo-ramoso, ramis adscendentibus, foliis distichis patentibus oblique ovatis acutiusculis integris, stipulis oppositifoliis ovato-acuminatis basi leviter cordatis adpressis, spicis terminalibus compressis secundis solitariis vel geminis, squamis capsulisque dimorphis, capsulis lateralibus minutissimis *cupuliformibus* abortivis? intermediis multo majoribus obtuse triangularibus 4-sporis, squamis marginalibus imbricatis distichis carinato-falcatis complicatis inæquilateris margine inferiore ciliatis, squamis intermediis biserialibus alternis adpressis imbricatis ex ovato triangularibus acutis ciliatis.—Crescit in umbrosis provinciæ Malwan.—1–2-uncialis, præcedente multo minor.

4. L. *curvatum;* caule erecto sulcato diaphano semipedali ramoso, foliis distichis in caule distantibus ovatis acutiusculis inæquilateris patentibus in ramis ramulisque approximatis oblongis vel ellipticis mucronulatis apicem versus minute serrulatis, stipulis semiovatis mucronatis alternifoliis adpressis, spicis terminalibus solitariis *tetragonis* 5–6 lin. longis curvatis squamis conformibus ovatis setaceo-acuminatis dorso leviter carinatis imbricatis, capsulis dimorphis inferioribus parvis orbiculatis minutisporis supremis multo majoribus obtuse triangularibus 4-sporis.—Crescit cum præcedente.

These three last species are very delicate, and much more like species of *Jungermannia* than *Lycopodium.*

Fitch del et lith.

Reeve & Nichols, imp.

Dammara Perousii *Moore.*

Notice of a new species of DAMMARA, *detected by* MR. CHARLES MOORE *in La Peyrouse's Island; by* SIR W. J. HOOKER, D.C.L., F.R.A. & L.S.

(TAB. IV.)

In a late number of our Miscellany we figured a new and interesting Fern from New Caledonia, discovered by Mr. Charles Moore, and we have now the pleasure of representing a much more remarkable plant, discovered by him on the same expedition (voyage of H.M.S. Havanah, Capt. Erskine, R.N.), a new species of *Dammara ;* and since it was found on the island where the ill-fated but very distinguished navigator, La Peyrouse, lost his ship and his life, we had intended that it should bear the name of *D. Peyrousii :* but since the name was inscribed on our plate, we find it published in the last part of the sixth volume of the Journal of the Horticultural Society, under the appellation, which we consequently adopt, of

DAMMARA MACROPHYLLA, *Lindl.*

Foliis ovato-lanceolatis sensim acuminatis membranaceo-coriaceis basi in petiolum brevem tortum attenuatis, strobilis globoso-ellipticis (magnis), squamis arcte adpressis quintuplo latioribus quam longis apice rotundatis. (TAB. IV. sub nom. *D. Perousii.*)

Dammara macrophylla, *Lindl. in Journ. Hort. Soc. v.* 6. *p.* 271.

HAB. Discovered by *Mr. C. Moore*, while on a voyage with Captain Erskine, R.N., in H.M.S. Havanah, in the island of Vanicolla, or La Peyrouse's Island, in the Pacific Ocean, lat. 11° 40′ S., long. 167° E.

Our portion of the branch of this tree is about 15 to 16 inches long, straight, terete, glabrous, and quite smooth, nearly as thick as the little finger, very medullose within, bearing six or seven pair of nearly opposite distichous leaves, between membranaceous and coriaceous, glossy, olive-brown when dry, from 5–7 inches long, ovate-lanceolate, from 2–2½ inches wide below the middle, then gradually acuminated towards the apex : at the very base rather suddenly tapering into a broad, short petiole, if it can be so called, for it is of the same texture and substance as the leaf itself, about 2 lines long, slightly twisted, so as to make all the leaves with their edges vertical and distichous ; there is no costa or nerve ; the whole surface is very minutely and longitudinally striated. Cone separate from the branch, almost exactly and broadly elliptical,—upon a petiole or stalk, about 1½ inch long and as thick as the middle finger, woody,—4½ inches long, and 3¼ or 3½ inches broad, very obtuse. The numerous scales are closely compacted, large, almost exactly resembling those of the cone of *Dammara orientalis;* the portions of the scales visible in the cone are narrow, much depressed, rhomboid, round at the upper and lower edge, and presenting no point or tooth whatever. There is a transverse depression in the centre, and a very indistinct umbo.

The Plate (IV.) exhibits a portion of a branch, with two leaves, and a cone, all of the natural size.

FLORULA HONGKONGENSIS: *an Enumeration of the Plants collected in the Island of Hong-Kong, by* Major J. G. Champion, 95*th Reg.*, *the determinations revised and the new species described by* GEORGE BENTHAM, ESQ.

(*Continued from p.* 81.)

MELASTOMACEÆ.

1. Melastoma *repens*, Lam.—Naud. in Ann. Sc. Nat. Par. ser. iii. vol. xiii. p. 274.

In some measure an alpine plant, being found on the summits of most of the Chinese and Hong-Kong hills, rarely at their bases. The fruit, which is pleasant to the taste, is the only edible species of *Melastoma* in Hong-Kong; the plant flowers and fruits during the greater part of summer.

2. Melastoma *candidum*, D. Don.—DC. Prodr. vol. iii. p. 145.—*M. calycinum*, Benth. in Hook. Lond. Journ. Bot. vol. i. p. 485.

Growing in similar localities to the *M. macrocarpum*, from which it is readily distinguished by the dense and much softer setæ, which are appressed on every part of the plant except a few on the petioles, generally rusty or reddish on the branches, whitish and silky on the young leaves, very long, soft, and silky, and very densely appressed on the calyx. The bracteæ and calycine lobes are also much larger. I have it from the collections of Hinds, Champion, Vachell, and Fortune (n. 64).

3. Melastoma *macrocarpum*, Don.—Naud. in Ann. Sc. Nat. ser. iii. vol. xiii. p. 281.

Hong-Kong hills, flowering from June to August.

4. Melastoma *sanguineum*, Sims, Bot. Mag. t. 2241.—Naud. l. c.?

Hong-Kong, with the two preceding, and shrubby like them; in woods, however, this species becomes a straggling under-tree, seventeen to eighteen feet high. Major Champion measured one of its flowers during rainy weather upwards of four inches in diameter. I have no doubt that this is the species figured by Sims from a plant raised from Chinese seeds. Naudin's character is taken from Javanese and Penang specimens, and does not mention, any more than Sims's description, the broad, smooth dilatation of the base of the calycine lobes, in the form of lateral appendages to the hispid portion, which is lanceolate. Should it prove, however, as conjectured by Naudin, that the *M. sanguineum* and *M. decemfidum* are but varieties of one species, the present form, without doubt, belongs to the same one.

5. Osbeckia *Chinensis*, Linn. Spec. p. 490, excl. syn. Pluk., non Auct. plur.—*O. linearis*, Blume.—Naud. l. c. vol. xiv. p. 70.

Common on grassy sides of Victoria Peak. Annual, or at any rate usually so, although the hard dry bases of the stems in the dried specimens give it the appearance of an almost suffrutescent perennial.

There can be little doubt that this plant, not uncommon about Canton, is Linnæus's original *Osbeckia*, gathered by Osbeck in South China; but the figure he quotes of Plukenet's, representing a Madras plant, is evidently the *O. serialis*, Naud., or *O. Zeylanica*, Wight et Arn. The garden plant, figured as *O. Chinensis* in the 'Botanical Magazine,' t. 4026, is a very different species, and there is no evidence of its being of Chinese origin. Blume's *O. linearis*, a common species in the Philippines and Moluccas, well described by Naudin, agrees precisely with our Chinese one, and we should be well disposed to concur with his suggestion, that the common Himalayan *O. angustifolia* is a mere variety of the same.

The *Allomorphia pauciflora*, described in my enumeration of Hinds's Hong-Kong plants, has not been found by Major Champion.

6. Memecylon *ligustrifolium*, Champ., sp. n.; ramulis teretiusculis, foliis ellipticis basi acutis breviter petiolatis apice vix acuminatis coriaceis uninerviis, pedunculis petiolo paulo longioribus paucifloris, alabastris globosis obtusis, ovulis 8–10 annulatis.—*Frutex* glaberrimus, ramulis tenuibus. *Folia* 2–3 poll. longa, circa pollicem lata, petiolo bilineari, basi apiceque plus minus angustata, apice obtusiuscula v. rarius in acumen obtusum contracta, adulta crassiuscula et in sicco flavicantia, costa prominente venis lateralibus inconspicuis

v. rarius paucis obscuris. *Pedunculi* 2–3 lin. longi, 3–5-flori. *Bracteæ* minutæ, squamæformes, caducæ. *Pedicelli* vix lineam longi. *Alabastra* fere 2 lin. diametro, depresso-globosa. *Calycis* limbus latissime et brevissime 4-dentatus. *Discus* epigynus calycem intus vestiens, carnosulus, in alveolas 8 antheras ante anthesin recipientes divisus. *Petala* late orbiculata, calycis tubo subbreviora. *Ovarium* intus nec divisum nec costatum, ovula circa placentam brevem centralem verticillata. *Bacca* 4-5 lin. diametro. *Semen* unicum, cavitatem implens, cotyledonibus carnosis insigniter plicatis.

Hong-Kong, gathered in flower and fruit in January, 1850. The foliage is not unlike that of some varieties of *Memecylon edule*, but the flowers are much fewer in each peduncle, and twice their size. Our plant agrees in many respects with Hooker and Arnott's description of their *M. scutellata*, but much less with Loureiro's *Scutula scutellata* (from which the name is taken up), a Cochin-Chinese, not a Canton species; nor can I find any traces of ribs or divisions withinside of the ovarium.

MYRTACEÆ.

1. Bæckea *frutescens*, Linn.

Gregarious, on bare hills. Mount Gough, etc. Many of the Chinese hills look as if heath-clad with this species, and such localities afford good cover for partridges and pheasants.

2. Syzygium *buxifolium*, Hook. et Arn. Bot. Beech. p. 187.

A small, much branched, leafy shrub, growing principally on bare hills, and flowering in summer. *Flowers* small, scentless, in a short terminal panicle. *Calyx* minutely 4-toothed. *Petals* 4, united by pairs in a calyptra falling off as the flower opens. *Ovary* 2-celled, with several pendulous ovules in each cell. *Fruit* globose, 4–6 lines in diameter, purplish-black, with one large seed.

3. Syzygium *odoratum*, Hook. et Arn. Bot. Beech. p. 187.

Happy Valley woods, where it grows to be a large tree.

4. Syzygium *nervosum*, DC. Prodr. vol. iii. p. 260.

Near the Albany barracks, arboreous.

7360

5. Acmena *Championii*, Benth., sp. n.; arborea, foliis ovali-ellipticis oblongisve obtusis v. obtuse acuminatis basi angustatis coriaceis nitidis, venulis tenuibus obscure punctatis, racemis brevibus paucifloris, pedicellis brevissimis, calyce glabro elongato-clavato repando-4-den-

tato, fructu oblongo ovoideo 1–2-spermo.—Tota glaberrima. *Ramuli* tenues. *Folia* $1\frac{1}{2}$–$2\frac{1}{2}$ poll. longa, pleraque in acumen obtusum plus minus producta, basi longe contracta in petiolum brevem, costa subtus prominente, venulis supra inconspicuis subtus tenuibus. *Flores* desunt. *Pedunculi* fructiferi in axillis superioribus petiolo vix longiores, 1–3-carpici, ad apices ramorum pollicares, fructibus 5–7. *Calyx* defloratus 4 lin. longus, anguste clavatus, margine ultra ovarium producto, brevissime lateque 4-dentato. *Ovarium* biloculare, ovulis in quoque loculo pluribus. *Bacca* subdrupacea, 5–6 lin. longa, calycis limbo coronata. *Pericarpium* tenuiter carnosum, endocarpium crustaceum. *Semen* nunc solitarium fructu conforme, nunc gemina cavitatem implentia collateralia v. superposita, testa tenui, cotyledonibus crassis conferruminatis.

Near the waterfall in the Happy Valley. This species is evidently allied to *Acmena Wightiana*, figured in Wight Ic. t. 529. The leaves are smaller, more blunt, with less conspicuous veins, the calyx rather shorter. The flowers not having been yet seen, it remains to be proved whether there is the same curious multiplication of petals as in Wight's species. Of three fruits opened, one had a single seed, taking the shape of the fruit, the two others had two seeds each, forming together a mass of the same shape as the single seed; in one case they were superposed, and consequently each seed was horizontally truncated, in the other they were collateral and separated by a vertical plane.

6. Jambosa *vulgaris*, DC.

Cultivated in Hong-Kong, but also occasionally appearing to grow wild.

7. Psidium *pomiferum*, Linn.

Of this, the common Indian Guava, there are no specimens, but in Major Champion's notes it is said to be found wild in the island.

8. Rhodomyrtus *tomentosa*, DC.

Abundant on all low hills. The fruits ripens well and is pleasant to the taste.

HOMALINEÆ.

1. Blackwellia *fagifolia*, Lindl., in Hort. Trans. vol. vi. p. 269.—*B. padiflora*, Lindl. Bot. Reg. t. 1308.—*B. Loureiri*, Benth. in Lond. Journ. Bot. vol. i. p. 482.

A beautiful shrub, abundant in Hong-Kong, and growing almost to

a tree in the Happy Valley woods. It blossoms at least twice in a year. It appears also to be frequent about Macao and Canton, from whence we know of no other species, and fully agree with Hooker and Arnott, in considering the two published by Lindley as one and the same. It differs, however, in several essential points from Loureiro's character of *Pythagorea*, but coincides exactly with that of *Astranthus* of the same author, and on this account I had given to the plant the name of *B. Loureiri*, thinking that Lindley's plant might be different. Loureiro's plants are, however, both Cochin-Chinese, they are both probably *Homalineæ*, but without seeing original specimens, or at any rate specimens from the same country, it would be difficult to identify them satisfactorily. The confusion of synonymy has been, unfortunately, much increased by errors in copying or printing, for I can trace no other origin to the names of *B. Chinensis*, *grandiflora*, and *padifolia* attributed to Lindley by Steudel, and that of *pubiflora*, Lindl., inserted in Walpers' Repertorium.

The flowers of this species have the perfume of our hawthorn. After they wither the perianth remains some time attached to the ovary, and the lobes become slightly enlarged. They vary in number from six to nine pair. The styles and placentæ are two, three, or four, with three ovules to each placenta. The fruit has not been observed.

PASSIFLOREÆ.

1. Passiflora *fœtida*, Cav.

Found wild in a ditch near a bungalow in the Happy Valley, but evidently introduced, as it is an American species.

BEGONIACEÆ.

1. Begonia (Diplochonium) *Bowringiana*, Champ., sp. n.; caule herbaceo erecto ramoso, foliis late inæqualiter cordatis irregulariter 5–7-lobis, lobis latis brevibus acutis dentatis lobatisve supra hispidulis subtus ramulisque novellis rufo-lunatis, pedunculis folio brevioribus paucifloris, capsulæ alis 2 angustis tertia elongata.—*Rhizoma* crassum. *Caulis* ad axillam squamæ stipulæformis sesquipedalis, parce ramosus, carnosulus, ad nodos subincrassatus. *Stipulæ* membranaceæ, ovatæ, 4–6 lin. longæ, obtusiusculæ et tenuissime aristulatæ. *Folia* longiuscule petiolata, majora 6–8 poll. longa, 4–6 poll. lata, lobis valde inæqualibus sæpius longitudine sua latioribus. *Pili* paginæ

superiores vix oculo nudo conspicui, lana paginæ inferioris, ramulorum et petiolorum laxissima, demum sæpe derasa. *Pedunculi* in axillis superioribus subbipollicares apice flores ferunt 3–4 masculos cum unico fœmineo, inæqualiter pedicellatos, nutantes. *Flores masculi:* petala exteriora (v. sepala) 2 suborbiculata semipollicaria, interiora 2 oblonga concava 3 lin. longa; columna staminifera brevis; filamenta singula anthera oblonga sublongiora. *Flores fœminei:* petala 4 subæqualia, oblique ovata, 3–4 lin. longa, addito interdum quinto interiore angusto. *Stylus* brevissimus, crassus, trifidus, stigmatibus crassis flexuosis. *Capsula* 5–7 lin. longa, minute hirtella, alis 2 angustis, tertia horizontaliter extensa, 7–8 lin. longa; placentæ in loculis duplicatæ, loculus unus sæpe abortu vacuus.

Hong-Kong, flowering in October. The flowers are light pink, the fruit a dark green.

CRASSULACEÆ.

The *Bryophyllum calycinum*, gathered in the island by Mr. Hinds, is not in Major Champion's collection.

SAXIFRAGACEÆ.

1. Adamia *versicolor*, Fortune, in Journ. Hort. Soc. vol. i. p. 298.—Lindl. et Paxt. Fl. Gard. t. 5.—*A. Chinensis*, Gardn. et Champ. in Kew Journ. Bot. vol. i. p. 311.

Ravines of Mount Victoria, also Mount Parker. Flowers in June. The fruit, which ripens in January, is at first green, but assumes eventually a bright blue colour.

2. Itea *Chinensis*, Hook. et Arn. Bot. Beech. p. 189. t. 39.

Happy Valley, on the outskirts of the woods at the top of the ridge, where several shrubs of it were found in July, 1848, but in fruit only. They did not flower at all in 1849.

UMBELLIFERÆ.

1. Hydrocotyle *rotundifolia*, Linn.

Common in rice-fields.

2. Hydrocotyle *Asiatica*, Linn.

With the preceding species, but not so common.

ARALIACEÆ.

1. Aralia *Chinensis*, Linn.

Scarce in Hong-Kong.

2. Paratropia *Cantonienis,* Hook. et Arn. Bot. Beech. p. 189.

This fine species is common in Hong-Kong as well as in China. It grows to a moderate-sized tree, flowering in December and fruiting in the course of the winter.

1407. 3. Hedera *parviflora*, Champ., sp. n.; inermis, foliis integris ovali-ellipticis oblongisve acuminatis trinerviis divaricato-penniveniis nitidis, pedunculo petiolis longioribus breviore, umbella simplici globosa, floribus parvis, stylis concretis, fructu globoso.—*Frutex* glaberrimus. *Folia* versus apices ramorum sæpe subopposita v. in verticillos spurios approximata, nunc brevissime nunc longe petiolata, majora 5 poll. longa, 2 poll. lata, apice breviter acuminata, basi obtusiuscula, consistentia laurina, supra nitidula, costa media subtus valde prominente, lateralibus minus conspicuis margini approximatis; venæ a costa divergentes paucæ, tenues. *Pedunculi* in specimine solitarii, terminales, semipollicares v. paulo longiores, apice in receptaculum disciformem dilatati. *Umbella* florens 8 lin. diametro. *Pedicelli* numerosissimi, 2 lin. longi. *Flores* vix linea longiores. *Calycis* margo brevis, minute 5-dentatus. *Petala* 5, apice leviter inflexo-incrassata. *Stamina* petiolis alterna, filamenta iis paulo breviora. *Styli* in unum petalis breviorem coaliti. *Bacca* globosa, 5-locularis, ea *H. helicis* paulo minor.

Hong-Kong, the precise station not recorded.

4. Hedera *protea*, Champ., sp. n.; fruticosa, inermis, foliis integris 1408 uninerviis v. profunde 2–3-fidis 2–3-nerviis divaricato-penniveniis ellipticis oblongis lanceolatisve coriaceis, pedunculis petiolo longiore brevioribus, umbella simplici globosa multiflora, stylis concretis, fructu globoso.—*Frutex* erectus, glaberrimus. *Folia* valde variabilia. *Petiolus* nunc brevissimus, nunc fere bipollicaris; lamina integra ovali-oblonga sesquipollicaris, v. lanceolata 4–5-pollicaris, v. fere 2–3-partita lobis lanceolatis; costa media folii v. loborum valde prominens, margo anguste revoluta, venæ a costa angulo fere recto divergentes tenues, consistentia coriacea. *Pedunculi* terminales, solitarii v. 2–3-ni, 6–9 lin. longi. *Umbella* et flores fere *H. parvifloræ*, nisi flores pauciores et dimidio majores. *Petala* evidentius inflexo-mucronata. *Stylus* brevior. *Bacca* globosa, 5-locularis, magnitudine fere *H. helicis*.

A handsome shrub, in ravines of Mount Gough and Mount Victoria.

Loranthaceæ.

1. Viscum *orientale*, Willd.—DC. Prod. vol. iv. p. 278[*].

Upon trees in the Happy Valley.

2. Viscum *moniliforme*, Blume.—Wight et Arn. Prod. vol. i. p. 380.

Only once found in the Happy Valley.

3. Loranthus *Scurrula*, Linn. Spec. Pl. p. 472? non Roxb.—*L. Chinensis*, DC. Coll. Mem. 6. Loranth. t. 7. Prodr. vol. iv. p. 301.

Upon trees, Hong-Kong. The specimens agree well with De Candolle's figure, as well as with Linnæus's description, as far as they go. The full-grown leaves are smooth, the young shoots and leaves are clothed with a ferruginous or whitish, chaffy or farinaceous down, as in *L. pulverulentus* or *L. graciliflorus*, and can scarcely be said to be *ferrugineo-villosa*, as in De Candolle's character. The flowers are 7 to 8 lines long, slightly farinaceous when young, nearly smooth when expanded.

(*To be continued.*)

Note on the Spines of Cactuses; by BERTHOLD SEEMANN.

It has been mentioned as something remarkable, that one of M. Ehrenberg's *Echinocacti* had upwards of 2000 spines. By counting first the number of spines, then that of the bundles of each rib, and ultimately that of the ribs of every individual, I arrived at the following result:—An *Echinocactus Wislazenii*, Engelm., in the possession of Frederick Scheer, Esq., was found to have 8360 spines, and the *E. Visnaga*[†], Hook. (*E. platyceras*, Lem.), in the Royal Gardens, 17,600. There was formerly at Kew a specimen of the latter, which was at least three times larger than the present, and which cannot have had less than 51,000. Those Cacti, whose bundles consist of a greater number of spines, present results still more surprising. The tallest *Pilocereus senilis*, Lem., at Kew, having thirty in each bundle, has a total number of 72,000. Yet these plants, giants as they appear in European conservatories, are but pigmies amongst their kindred at home. And if these small specimens have such a number, how many may a full-grown plant possess, and how great may be the number of spines produced in Mexico, a country where a man may travel for days without seeing any other vegetation save vast groves of Cactuses!

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[*] I am well aware that recent investigations have induced several botanists to propose the generic separation of several if not the whole of the tropical *Visca* from our European species, and that Mr. Miers, from a very careful examination and comparison of their structure, has been led to consider *Viscum* and its allies as totally disconnected with the true *Loranthaceæ*. But the entering into this question would lead me too far from our present purpose; nor is it necessary on this occasion, as I have no new species to propose, and consequently no new names to add, which by being recorded under wrong genera, might increase the number of useless synonyms.

[†] The specific name, "*Visnaga*" is the native appellation of the plant in Mexico, and means "*toothpick*," from the use made of these spines. If these could sell at only one penny each, a nursery of such Cactuses would be a great treasure.—ED.

BOTANICAL INFORMATION.

Dr. A. Blanco.

We are glad to find that the South Americans are at last turning their attention to the great treasures which nature has scattered around them. M. Gay, a citizen of Chili, is still engaged in the publication of the Flora of his native country; and the Republic of Peru, we are happy to add, has just appointed M. Antonio Blanco, M.D., to be Professor of Botany in Lima. M. Blanco has done a great deal in exploring Andalusia. He departed from Europe in March.

M. Bourgeau's *Spanish Plants.*

L'Association Botanique Française d'Exploration est sur le point de terminer le partage des Collections recueillies, en 1851, par son voyageur en Espagne, M. Bourgeau, dans la première partie du voyage annoncé dans la circulaire du 4 Février dernier. Les collections, sous peu de jours*, pourront être envoyées à tous les souscripteurs; elles contiendront environ 400 à 500 espèces, nombre plus considérable que celui qui avait été annoncé: M. Bourgeau ayant été forcé de revenir à Paris, vers la fin du mois de Novembre, par des circonstances indépendantes de sa volonté, a cru devoir achever la distribution de toute sa récolte, avant de repartir de Paris, dans la crainte que les échantillons ne pussent s'altérer s'ils avaient dû être gardés encore pendant une année.

Aucune modification n'est, du reste, apportée aux engagements pris

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* This collection is now (March, 1852) distributed, and fully equals all the former ones of M. Bourgeau in the rarity and beauty of the specimens.—Ed.

par M. Bourgeau, et il réalisera cette année la seconde partie du voyage; telle qu'elle a été annoncée. Les 50 francs versés à l'avance par les souscripteurs aux collections les plus complètes ne seront déduits, ainsi que cela a été convenu, que sur le prix du complément de la collection dont la livraison aura lieu vers la fin de 1852.

Nous profitons de cette occasion pour informer les souscripteurs qu'il ne reste qu'un petit nombre des collections suivantes:—Deux centuries (à 20 fr. chaque) recueillies aux environs de Mostaganem, en 1850, par M. Balansa, qui explore cette année la province d'Oran et doit visiter les environs de Tlemcen;—120 espèces de choix recueillies aux environs d'Alger, en 1850, par M. P. Jamin (les collections de 1851, également composées de plantes intéressantes des environs d'Alger, contiennent environ 123 espèces); M. P. Jamin, actuellement fixé à Biskara, à la limite du désert ou Sahara Algérien, continuera à adresser à la Société une ou deux centuries par an:—une centurie de plantes de choix recueillies dans le Val Sassina (Lombardie) par M. Daënen;—quelques centuries de plantes de Corse provenant de l'herbier de M. Soleirol.

Les souscripteurs qui n'ont pas encore fait la demande des collections ci-dessus indiquées sont priés de la faire le plus tôt possible, afin que, s'il y a lieu, on soit à même d'éviter des frais de transport en ne faisant qu'un seul envoi.—Les lettres doivent être adressées à M. Ernest Cosson, à Paris, rue du Grand-Chantier, no. 12, ou à M. Bourgeau, rue St. Claude, no. 14, (au Marais.)

Mr. Drummond's Plants of Western Australia.

The indefatigable, and we may now say venerable, Mr. James Drummond, writes us word, from his residence, Hawthornden Farm, Swan River, in a letter dated Dec. 28th, 1851, that he and his son have just returned from a long and interesting journey of eighteen months' duration, to the north of that settlement. They had several narrow escapes with their lives from the hostility of the natives; and nowhere could they move without being armed themselves with double-barrelled guns and accompanied by a party equally well provided with weapons of defence. Mr. Drummond was happily rewarded by a considerable collection of plants, containing many novelties and even some new genera. Among the *Proteaceæ* is a genus with the habit of *Persoonia*, with the seeds an inch long, shaped like the keys of the Ash, and the

seed-vessel, which opens at the top, contains but one seed. A plant, with the habit of *Dryandra Fraseri*, growing to the height of twelve or fifteen feet, has seed-vessels of the size and shape of a musket-ball, each bearing two seeds. There is a remarkable plant of the family *Cruciferæ*, which, after flowering, buries its pods underground. A new Dilleniaceous plant has the habit and appearance of *Daviesia juncea*, and is equally leafless. Seven new *Banksias* are in the collection. But we need not enumerate any more, as it was Mr. Drummond's intention to despatch the collections to England by the earliest opportunity, and we presume they will be consigned to our friend Mr. Heward, Young-street, Kensington, for distribution among the subscribers.

Superstitions with regard to Glastonbury Thorn.

"It is handed down that when Joseph of Arimathea, during his mission to England, arrived at Wearyall-hill, near Glastonbury, he struck his travelling staff into the earth, which immediately took root, and ever after put forth its leaves and blossoms on Christmas Day, being converted into a miraculous thorn. This tree, which has two trunks, was preserved until the time of Queen Elizabeth, when one of the trunks was destroyed by a Puritan; and the other met with the same fate during the Great Rebellion. Throughout the reign of Henry VIII. its blossoms were esteemed such great curiosities and sovereign specifics, as to become an object of gain to the merchants of Bristol, who not only disposed of them to the inhabitants of their own city, but *exported* these blossoms to different parts of Europe. There were, in addition to these, relics for rain, for avoiding the evil eye, for rooting out charlock and all weeds in corn, with similar specifics, which were considered at this time *the best of all property*."—*Notes and Queries*.

NOTICES OF BOOKS.

HARVEY, WILLIAM HENRY, M.D., *etc.*: NEREIS BOREALI-AMERICANA; *or, Contributions towards a History of the Marine Algæ of the Atlantic and Pacific Coasts of North America*. Part I., Melanospermeæ. Royal 4to, 144 pp., twelve coloured plates, representing thirty-two species.

We have not a more industrious botanist in Europe than Dr. Harvey, and none whose qualifications better fit him for the various works he has undertaken, not only as a naturalist, but as an artist; for Dr. Harvey does not confine his manual labours to the use of the pen in describing faithfully from nature, all the illustrations are from his own accurate pencil, and not drawn only, but lithographed by him.

The *Nereis Boreali-Americana* owes its origin to the Smithsonian Institution in North America, and W. J. M. Bailey, Esq., Professor of Chemistry, U. S. Military Academy, West Point, who, by the encouragement they give to the publication of the vegetation of their own territories, in this case free the author from loss. A brief advertisement attached to this part informs us that the work will appear in three portions.

1. MELANOSPERMEÆ; with twelve plates (now published, November, 1851).
2. RHODOSPERMEÆ; twenty-four plates, to appear during 1852.
3. CHLOROSPERMEÆ; twenty-four plates, to appear during 1853.

There will be about 450 pages of letterpress, and full indexes of species and synonyms, and descriptions of the plates will be furnished at the conclusion of the work. The "Introduction" occupies forty-three closely-printed pages, and is full of sound, interesting, and useful matter, bearing upon the structure of the *Algæ* generally, under the several heads of *Root*, *Frond*, *Colour*, *Fructification*, *Movements of Algæ*, *Habitat*, *Geographical Distribution* (more especially of the American species), *Collecting* and *Preserving*, and last, though not least in interest, the *Uses of the Algæ*, concluding with an acknowledgment to those who have contributed to the collections described in the work, and all written in language as attractive as it is scientific. The compliment paid to the character of the "venerable" Menzies is all our space will allow us to quote as a specimen of the introductory pages: "But I should not, in speaking of the North-west Coast, omit to mention a name which will ever be associated in my mind with that interesting botanical region, the venerable Archibald Menzies, who accompanied Vancouver, and whom I remember as one of the finest specimens of green old age that it has been my lot to meet. He was the first naturalist to explore the Cryptogamic treasures of the north-west, and to the last could recall with vividness the scenes he had witnessed, and loved to speak of the plants he had discovered. His plants, the companions of his early hardships, seemed to stir up recollections of every circumstance that had attended their collection, at a distance of more than half a century back from the time I speak of. He it was who first possessed me with a desire to explore the American shores, a desire which has followed me through life, though as yet it has been but very imperfectly gratified. With this small tribute to his memory I may appropriately close this general expression of my thanks to those who have aided me in the present undertaking." The rest of the pages are devoted to the botanical history of the genera and species.

The author's admirable 'Phycologia Britannica,' in three volumes, royal 8vo, each volume containing 120 plates, with full synopses and indexes, is completed; but, valuable as the contribution to our knowledge of the *Algæ* the 'Nereis Boreali-Americana' is, we trust that the continuation and completion of the 'Nereis Australis,' a work of equal value with the present, will not thereby be delayed, and of which we have as yet only one of four fasciculi (to which the work is to extend) on our shelves.

JAUBERT *et* SPACH: ILLUSTRATIONES PLANTARUM ORIENTALIUM; *ou, Choix de Plantes Nouvelles ou peu connues de l'Asie Occidentale.* Imp. 4to. Paris.

We are happy to find this important work continued with unabated zeal and talent. It has extended now to three volumes complete, each with 100 plates, and we have now before us three numbers with thirty-nine plates of vol. iv. Vol. ii. is rich in *Polygoneæ*, *Compositæ*, and *Genistæ* among *Leguminosæ*;—Vol. iii., scarcely less so in *Compositæ*, including some very remarkable genera and species; and several new species of *Amygdalus*, of *Ebenus*, *Haplophyllum*, *Nitraria*, *Reaumuria*, etc., are admirably illustrated. The three numbers of the third volume have many plates devoted to Grasses, others to new Thymelaceous plants. In no work that we are acquainted with, is more labour bestowed on careful diagnosis and admirable analysis of figures.

ERRATUM.—At p. 63, line 4 from the top, instead of $32\frac{1}{2}°$, read $23\frac{1}{2}°$.

Frederic Reeve

An[illegible] Afzelii

Description of a new Species of AMOMUM, *from Tropical West Africa;*

by J. D. HOOKER, M.D., F.R.S. *With a Plate.*

(TAB. V.)

Beautiful specimens of the flowers of this plant, preserved in spirits, together with a dried leaf, and the fruit, have been presented to the Kew Museum by Dr. Daniell, with the name *A. Afzelii?* or Bastard Melligetta, attached. The true *A. Afzelii* of Roscoe, however, has been identified with the *A. Granum-Paradisi* of Linnæus, *A. grandiflorum* of Smith (Exot. Flora, vol. i. t. 111), and *A. exscapum* of Sims (Ann. Bot. vol. i. p. 248. t. 13); and has been lately figured in the 'Botanical Magazine,' t. 4603, from specimens which flowered at Kew. A full description of that plant will be found there, together with its intricate synonymy. The present differs widely from it; and I propose that it should bear the name of its zealous discoverer, to whom we feel extremely indebted for the light he has thrown upon the difficult subject of African *Amoma*.

Amomum *Danielli*, Hook. fil.; glaberrimum, caule elongato folioso, foliis lineari-lanceolatis ($1\frac{1}{4}$ ped. longis, 3 unc. latis) longe acuminatis striato-venosis, scapis radicalibus floriferis 2 unc. fructiferis 4–6 unc. longis 3–5-floris, bracteis oblongo-cymbiformibus obtusis, floribus flavis, corollæ lobis lateralibus patentibus subulato-acuminatis dorsali amplo obovato-oblongo cæteris longiore, labello late lineari-oblongo planiusculo rigido margine subundulato, filamento basi utrinque appendicula subulata aucto, fructu lineari-ampullaceo rostrato. (TAB. VI. sub nom. *A. Afzelii.*)

HAB. Gold and Slave Coasts, and Clarence Town, Fernando Po; abundant, *Dr. Daniell*. Fl. June and July.

A tall, handsome species, growing, according to Dr. Daniell, 8–9 feet high, and the stem an inch and more thick. The flowers are described as of a beautiful yellow colour, in this respect differing widely from those of the true Melligetta, as also in the acid pulp surrounding the seeds, that of *A. Granum-Paradisi* being quite tasteless. No West African species has been described hitherto with yellow flowers, or with the parts of the flowers at all of the same shape as this. The natives call it "Barsalo," to distinguish it from a smaller alpine variety (species?), named "Tokoloni promah," which may, according to Dr.

Daniell, be the same as, or closely allied to, the true Melligetta, judging from the pungency of its seeds.

Dr. Pereira has published an excellent figure of the fruit of this plant from Dr. Daniell's specimens, and suggests the possibility of its proving the same as *A. Clusii* of Smith, in 'Rees' Cyclopædia,' a point it is impossible to determine from the description given in that work. The specimens I have examined of Dr. Daniell's plant are not like Pereira's figure of *A. Clusii* (Mat. Med. vol. ii. fig. 249), but exactly resemble the figure given of the Bastard Melligetta, fig. 251, 252, taken from fruits communicated by its discoverer.

The subject of African *Amoma* is an extremely difficult one, and except good specimens of the flowers be preserved in spirits, and of the leaves and fruit dried to accompany them, and so ticketed on the spot as to preclude the possibility of any of these three parts being confounded with those of similar species, it is quite hopeless to attempt to elucidate the species. Hitherto specific characters have been too much drawn up from very insufficient specimens of the fruit only. It is very much to be desired that this difficult matter should be cleared up, and that Dr. Daniell will renew the study with his wonted zeal in the native country of the Melligettas, and will collect all the species he encounters, in various states of flower, leaf, and seed, ticket them on the spot, and remit them to England, with such valuable notes and observations as he has been in the habit of collecting.

The Plate V. represents the flower and fruit.

DECADES OF FUNGI; *by the* REV. M. J. BERKELEY, M.A., F.L.S.

Decades XXXIX., XL.

Sikkim and Khassya Fungi.

(*Continued from p.* 107.)

381. *A.* (Naucoria) *descendens*, n. s.; pileo hemisphærico exumbonato sicco glabro sublateritio expallente; stipite obliquo annulato fistuloso basi incrassato; lamellis pileo subconcoloribus adnatis albomarginatis. Hook. fil., Ser. 2, No. 14.

HAB. In pine-woods; amongst moss. Sikkim, 11,000 feet.

Inodorous. Pileus 1–1½ inch or more across, hemispherical, perfectly obtuse or very slightly conical, dry, smooth, dark red-brown, almost lateritious, becoming tan-coloured as it dries, thin, but not membranaceous; margin slightly striate, sometimes reflected. Stem $1\frac{1}{2}$ inch high, $1\frac{1}{2}$ line thick, rather incrassated at the base, reddish-brown, furnished with a short spongy ring above the middle, which is at length evanescent. Gills cinnamon, ascending, adnate, rather distant; margin white. Spores subelliptic, $\frac{1}{4500}$ of an inch long.

Not so slender a species as *A. temulentus*, with which it is nearly allied, and distinguished by its ring and other marks. The specific name has the same import as that of *Allium descendens.*

382. *A.* (Galera) *vinolentus*, n. s.; pileo campanulato vinoso-fulvo expallente, margine striato; stipite elongato deorsum incrassato lamellisque adscendentibus vinosis. Hook. fil., Ser. 2, No. 13.

Hab. Amongst mosses, and on decayed wood in pine-forests. Sikkim, 11,000 feet.

Pileus $\frac{1}{2}$ an inch across, campanulate, membranaceous, at first of a dull vinous-tawny, then pallid; margin striate; flesh dark vinous-red, distinct from the stem. Stem $2\frac{1}{4}$ inches high, not a line thick, slightly incrassated below, fistulose, vinous-red. Gills ascending, ventricose, paler than the stem. Spores tawny, $\frac{1}{2500}$ of an inch long.

Allied to *A. tener*, but distinguished from all neighbouring species by the vinous tint of every part.

383. *A.* (Psalliota) *latipes*, n. s.; pileo expanso convexo umbonato sicco stipiteque marginato-bulboso sursum attenuato cavo squamosis; lamellis postice attenuatis. Hook. fil., Ser. 3, No. 24.

Hab. On the ground. Nunklow. Khassya, 4000 feet. July 11, 1850.

Pileus $4\frac{1}{2}$ inches broad, convex, expanded, with an obtuse well-marked umbo, fleshy, clothed with shaggy scales, dry, of a pale, dull tawny. Stem $5\frac{1}{2}$ inches high, about $\frac{1}{2}$ an inch thick in the centre, attenuated upward, swelling into a broad abrupt bulb below, 2 inches or more thick, tawny and scaly like the pileus, with some vinous blotches at the base, hollow. Gills attenuated behind, nearly free, at length dark purple-brown. Odour sweet; whole plant brittle.

An evident ally of *A. campestris*, and distinguished from all other neighbouring forms by the broad bulbous base. The hollow of the stem reaches only to the top of the bulb.

* *A. semiglobatus*, Batsch. Hook. fil., Ser. 3, No. 14.

Hab. On the ground. Myrung, Khassya, 6000 feet. July 8, 1850.

* *A. papilionaceus*, Bull. Hook. fil., Ser. 3, No. 1.

Hab. On the ground. Plains of Eastern Bengal; Jheels. June 4, 1850.

This form is rather more campanulate than usual, and the pileus is minutely floccose. The stem, as in European specimens, is pale, like the pileus, without any rufous tinge; and the gills are broad, adnate, with a white margin.

384. *Cortinarius* (Myxacium) *Emodensis*, n. s.; pileo convexo latissime umbonato carnoso medio flocculoso, margine sulcato; stipite valido obeso subæquali lævi solido, annulo deflexo amplo; lamellis e violaceis umbrinis. Hook. fil., Ser. 2, No. 2.

Hab. In pine-woods, on *Abies Webbiana.* Lachen, 10,000 feet. May 31, 1849.

Inodorous. Pileus 4 inches across, convex, subcampanulate, very obtuse or with a very broad umbo, tawny, flocculent in the middle, extremely fleshy; margin sulcate. Flesh white, umber beneath the cuticle. Stem 6 inches high, slightly curved above, 1 inch thick, slightly incrassated downwards, blunt, solid, even, paler than the pileus, within violet towards the outer surface; ring broad, deflexed, striate. Gills nearly equal, rounded behind, free or only adnexed, violet, shaded at the base with umber. Spores about $\frac{1}{2000}$ of an inch long, slightly granulated, exactly like those of *C. elatior.* The gills vary from free to adnexed and subdecurrent.

Nearly allied to *C. elatior*, but with a much thicker pileus and a brownish stem, and, above all, differing in its deflexed ring like that of *C. caperatus.* Eaten by the Bhoteas under the name of Onglau, or Yungla-tschamo, the latter word meaning Agaric. The Bhoteas, according to Dr. Hooker, distinguish several species of Tschamo, as Kyalee (white); Khow (snow); Nakku (black); Temo (yellow); Darchi (small); Jugga (dung).

385. *C.* (Myxacium) *vinosus*, n. s.; pileo discoideo viscoso glabro vinoso-fusco; stipite clavato viscoso floccoso vinoso farcto; lamellis subhorizontalibus adnatis fuscis. Hook. fil., Ser. 2, No. 30.

Hab. In pine-woods. Sikkim, 11,000 feet.

Brittle. Odour faint. Pileus scarcely 2 inches across, convex, regular, smooth, carnose, slightly viscid, of a dark vinous-brown, paler towards the margin. Flesh dark, like the pileus. Stem 2½ inches high, ½ an inch thick in the centre, clavate, but not bulbous, vinous, clothed with scattered flocci, slightly viscid, stuffed, paler within. Gills horizontal, broad, adnate, with a very slight emargination.

This species has somewhat the appearance of *C. purpurascens*. It is placed in *Myxacium* on account of the viscid stem, but does not associate very well with any described species.

* *C. violaceus*, Fries, Ep. p. 279. Hook. fil., Ser. 3, No. 13.

HAB. In woods. Myrung, Khassya. July, 1850.

The specimens are slightly umbilicate, and very tall.

386. *C.* (Dermocybe) *flammeus*, n. s.; pileo e globoso subhemisphærico subcarnoso flocculoso stipiteque deorsum incrassato cavo sanguineo-lateritiis; lamellis adnatis subdistantibus aurantiis variegatis. Hook. fil., Ser. 2, No. 20.

HAB. In pine-woods. Sikkim, 11,000 feet.

Inodorous. Cæspitose. Pileus at first nearly globose, then irregularly hemispherical, 1½ inch broad, rather fleshy, dry, sprinkled with flocci. Stem 3 inches high, about ½ an inch thick in the centre, incrassated downward, almost bulbous at the base, like the pileus, of a rich blood-colour, hollow, orange within; veil blood-coloured. Gills broad, ascending, adnate, orange, variegated with green. Spores subelliptic, about $\frac{1}{4000}$ of an inch long.

This species differs from *C. sanguineus* in its less graceful habit, from *C. miltinus* in its hollow elongated stem, and from both in the absence of any marked odour. Many other differences might be pointed out, especially that of the variegated gills, which, even when dry, have a greenish tinge. I find no difference in the spores.

* *C. saniosus*, Fries, Ep. p. 313. Hook. fil., Ser. 2, No. 15 (pro parte).

HAB. In pine-woods. Sikkim, 11,000 feet.

This is figured with an *Entoloma*, probably as the young state, agreeing as it does in form. The spores, however, are totally different: in this obliquely elliptic, about $\frac{1}{3500}$ of an inch long; in the other angular, and very strongly toothed, about $\frac{1}{2500}$ of an inch long.

As the specimen is young from whence the figure is taken, it is impossible to say very positively whether it is the plant of Fries or no. It is at any rate very closely allied.

* *Hygrophorus miniatus*, Fr. Ep. p. 330.

HAB. In pine-woods. Lachen, 10,000 feet. July 9, 1849. Larger than the usual form, but exactly agreeing with Bull. tab. 570. 2. E. F.

Brittle, inodorous. Stem hollow; pileus squamulose; colour of the pileus and stem brilliant orange-red. Gills adnate, decurrent. There is no figure, and the colour of the gills is not noted.

387. *H. Pomona*, n. s.; pileo hemisphærico subfloccoso fulvo flavoque variegato; stipite incurvo fistuloso; lamellis pallidis decurrentibus acie undulata. Hook. fil., Ser. 3, No. 10.

Hab. On clay banks. Moflong, Khassya. July 1, 1850.

Inodorous, brittle. Pileus 1½ inch across, hemispherical, sometimes slightly umbonate, dry, fleshy, tawny, shaded here and there with yellow, obscurely floccose, surface glistening; flesh yellow; margin even. Stem incurved, 1–1½ inch high, tawny or yellow, truly fistulose. Gills flesh-coloured or pale yellow, truly decurrent, thick, fleshy, brittle.

A pretty species, allied to *H. fulvus*. Like many other species from Khassya, growing on clay-banks, the stem is more or less horizontal.

388. *H. fulvus*, n. s.; pileo campanulato obtuso subcarnoso læte fulvo pulverulenti-squamoso, margine striato; stipite tenui æquali concolore; lamellis luteis adnatis postice attenuatis. Hook. fil., Ser. 2, No. 23.

Hab. In pine-woods. Sikkim, 11,000 feet.

Brittle. Pileus scarcely half an inch broad, campanulate, obtuse, not viscid, rather fleshy, bright tawny, sprinkled in the centre with little dust-like scales; margin striate. Stem 2 inches high, 1½ line thick, nearly equal, smooth, tawny like the pileus, but paler and yellower below, fistulose. Gills broad, ventricose, yellow, adnate, attenuated behind.

A pretty little species, with the habit of *H. psittacinus*.

* *Lactarius vellereus*, Fr. Ep. p. 340. Hook. fil., Ser. 3, No. 34.

Hab. Fir-woods, 10,000 feet. Sikkim and Khassya. Oct. 24.

Thinner and more delicate than European specimens, but exactly agreeing in the peculiar clothing of the pileus and stem.

* *L. deliciosus*, Fr. Ep. p. 341. Hook. fil., Ser. 2, No. 33.

Hab. Lachen, 11,000 feet.

It is curious that only one of the species of *Lactarius*, which are comparatively rare in the collection, seems to have been found in a milky state. This is probably owing to the very moist climate. "*Lac aquosum* nunquam est normalis status, sed e loco humido depravatus," Fr. Ep. p. 333. The dried specimens are far thinner than those of our own country.

389. *L. princeps*, n. s.; pileo infundibuliformi sicco opaco subfarinaceo sanguineo-rubro; stipite obeso subconcolori deorsum attenuato solido; lamellis pallidis. Hook. fil. Ser. 3, No. 16.

HAB. In woods. Kullung, Khassya, 6000 feet. July 9, 1850.

Inodorous, milky. Pileus 4 inches across, irregular infundibuliform, dry, opake, subfarinaceous, of a deep rich blood-red. Stem 3½ inches high, more than an inch thick, straight, attenuated downwards, blunt, more tawny than the pileus, solid, white within, except towards the edges. Gills moderately broad, very pale, but partaking of the same tint as the stem, decurrent.

Allied to *Lactarius Volemus*, but a still more handsome species, remarkable for its very rich colour.

No. 12 is probably the old state of this, as the odour is putrid. The substance fleshy and brittle, not firm, as in No. 16; pileus moist, but not viscid, glistening; surface of stem opake, almost pubescent. The colour of every part is much darker. Gathered at Myrung, 6000 feet, July, 1850.

* *L. subdulcis*, Fr. Ep. p. 345. Hook. fil., Ser. 3, No. 28.

As I have seen no specimens of this species, and the drawings are unaccompanied by any notes, I cannot speak positively about it. The pileus is of a more or less dark reddish-brown, deeply umbilicate, and slightly carnose. The stem of the same colour as the pileus, and nearly equal, yellowish within, and solid when drawn. Gills at first yellowish, then reddish-brown. Another species, or possibly a *Russula*, from dry clay, was gathered at Nunklow, July 11, 1850, of a much paler colour, not at all umbilicate, and with a hollow stem, evidently at first stuffed. This is No. 26 of the same collection.

* *Russula sanguinea*, Fr. Ep. p. 351. Hook. fil., Ser. 2, No. 32.

HAB. In pine-woods. Lachen, 11,000 feet.

* *R. emetica*, Fries, Ep. p. 357. Hook. fil., Ser. 3, No. 31.

HAB. Khassya mountains, 1850.

* *Cantharellus infundibuliformis*, Fr. Ep. p. 366. Hook. fil., Ser. 3, No. 20.

HAB. On the ground. Myrung, Khassya. July 7, 1850.

The colour is duller than usual, but I have found very similar specimens in England, approaching somewhat to *C. cinereus*.

390. *Marasmius hæmatodes*, n. s.; pileo cum lamellis ex hemisphærico turbinato umbilicato sulcato purpureo; stipite brevi glabro solido insititio obscuriore; lamellis paucis adnatis sæpe triquetris. Hook. fil., Ser. 2, No. 31.

Hab. On pine-twigs. Sikkim, 11,000 feet.

Coriaceous, tough, scattered, inodorous. Pileus ½ an inch broad, at first hemispherical, then taller, with the gills turbinate, umbilicate; margin arched, deeply sulcate, vinous-purple. Stem scarce an inch high, not 1 line thick, solid, incurved, far deeper in colour than the pileus. Gills thick, broadly adnate, of the same colour as the pileus; interstices even.

Analogous to *A. hæmatopus*. It will come near *A. ramealis*, but the stem is by no means velvety. I do not know of any very nearly allied species.

391. *Marasmius Hookeri*, n. s.; pileo amplo hemisphærico viridi e disco centrali orbiculàri umbilicato, profundissime et latissime sulcato; stipite elongato fistuloso deorsum incrassato fulvo; lamellis distantibus paucis pallido-flavis postice rotundatis adnexis. Hook. fil., Ser. 3, No. 5. Tab. VI.

Hab. In copse-wood, on moss. Khassya mountains, 5000 feet. June 26, 1850.

Inodorous, dry, leathery. Pileus hemispherical, 2 inches across, very thin, yellowish-green, smooth, umbilicate in the centre, so as to form a yellow disc corresponding with the top of the stem, from which proceed about twelve deep and broad furrows, with as many shorter ones at the margin, where all are marked with transverse wrinkles. Stem 6 inches high, 2 lines thick above, 5 at the base, gradually incrassated downwards, and ending in a little rather abrupt bulb, firm, tawny, fistulose, yellow within. Gills nearly equal, rounded behind, and slightly adnexed, pale yellow; interstices even, except at the margin.

This is one of the finest fungi with which I am acquainted, and the prince of the genus *Marasmius*. I know of no species with which it can be compared. *A. prasius* is analogous in colour and sculpture.

* *M. rotula*, Fr. Ep. p. 385. Hook. fil., Ser. 2, No. 27, forma lamellis adnatis nec collariatis.

Hab. On leaves of maple, etc., in pine-woods. Sikkim, 11,000 feet.

The pileus is darker than usual, and the stem much elongated, but it appears to be the same with the European species, though the gills, which are few in number, and distant, are certainly adnate, as far as I can judge from the dried specimens and figures; at any rate, it is not *M. androsaceus.*

392. *Boletus furfuraceus*, n. s.; pileo convexo furfuraceo-squamuloso; stipite breviter annulato deorsum furfuraceo sursum nudo; tubulis minoribus adnatis. Hook. fil., Ser. 3, No. 9.

HAB. On clay-banks. Moflong, Khassya, 5500 feet. June 29, 1850.

Inodorous. Pileus 2¼ inches across, moist, but not viscid, convex, margin thin, acute, reddish-grey, rufous in the centre, sprinkled with little bran-like, flocculent scales. Stem oblique, solid, nearly equal, 1½ inch high, ⅓ of an inch thick, clothed below with a reddish furfuraceous coat, which ends in an irregular ring; yellowish above and naked. Tubes short, subadnate, yellowish, slightly tinged with red. Substance of stem and pileus pale, unchangeable, reddish beneath the cuticle.

This pretty little species resembles somewhat a *Lepiota.* Its nearest ally is *B. squalidus.*

393. *B. squamatus*, n. s.; pileo convexo æqualiter carnoso compacto squamis magnis luridis ornato, margine veli fragmentis amplis appendiculato; stipite incurvo rubido; hymenio sordide luteo tubulis amplis. Hook. fil., Ser. 3, No. 11.

HAB. Woods. Myrung, Khassya, 6000 feet. July 9, 1850.

Odour rather sweet. Pileus 2½ inches across, convex, very fleshy, dry, floccose, clothed with broad blackish scales, variegated with red and dirty white; margin appendiculate with the large broad triangular fragments of the veil, which are externally scaly like the pileus. Stem 3½ inches high, not half an inch thick, incrassated at the base, subbulbous, darker than the pileus, and, like that, shaded with red, white variegated with red and blue within when cut; striate at the top with the descending pores, which are rather long, dirty yellow externally, easily stained, olive within.

This species is allied to *B. subtomentosus* and *B. chrysenteron*, but at once distinguished by its scaly pileus and veil. Like most of the Indian *Boleti*, it is a very fine species.

394. *B. fragicolor*, n. s.; pileo turbinato obtusissimo purpureo, carne pallida in cute rubra; stipite obliquo bulboso lævi pileo concolore sed saturatiore; tubulis majusculis brevibus decurrentibus. Hook. fil., Ser. 3, No. 29.

HAB. Khassya mountains.

Pileus 6 inches across, nearly 3 inches thick in the centre, turbinate, broadly and very obtusely umbonate, purple; margin slightly lobed; flesh pale red beneath the cuticle. Stem oblique, 3 inches high, 1 inch thick in the centre, bulbous at the base, of a rich purple, much darker than the pileus. Tubes short, greenish-yellow, rather large, decurrent.

The substance of the stem and pileus is of a uniform, very pale yellowish tint, except beneath the cuticle, where, in either case, it is red.

This is a fine species, evidently allied to *B. subtomentosus* and *B. chrysenteron*, but abundantly distinct. It has the habit of such species as *B. æstivalis*. The stem is not reticulate, and therefore the species, though agreeing in the form of the stem, will not come in the section *Calopodes*.

395. *B. gigas*, n. s.; pileo convexo sicco fulvo squamulis superficialibus fasciculato-pilosis adsperso; carne pallida incarnata; stipite valido reticulato bulboso; tubulis argillaceis adnatis liberisve. Hook. fil., Ser. 2, No. 36.

HAB. In copses of *Andromeda* and Birch. Lachen river, 1200 feet. July 17, 1849.

Inodorous. Pileus 6 inches across, regularly convex, subhemispherical without the slightest umbo, tawny, dry, clothed with superficial fasciculate pilose scales; margin thin; flesh pale pink, tawny beneath the cuticle. Stem 6 inches high, $1\frac{1}{2}$ inch thick in the centre, $2\frac{1}{4}$ at the base, bulbous, attenuated upwards, curved, pale umber, lighter above and coarsely reticulated, solid, pink within, shaded towards the base with blue. Hymenium pale yellow. Tubes rather deep clay-coloured, either rounded behind and almost free, or slightly emarginate and adnate. Spores $\frac{1}{1750}$ of an inch long.

Allied to *B. edulis*, or at any rate belonging to the same groupe. A most magnificent species, whose pileus exactly resembles that of *B. variegatus*.

396. *B. areolatus*, n. s.; pileo amplo leviter depresso alutaceo fulvo verrucis hexagonis areolato; carne pallide flava; stipite deorsum attenuato; tubulis carneis decurrentibus. Hook. fil., Ser. 3, No. 6.

HAB. Open pastures. Kala-Panee, Khassya, 5500 feet. June 27, 1850.

Strobilomyces nigricans, *Berk.* Marasmius Hookeri. *Berk.*

Pileus 5 inches across, convex, slightly depressed in the centre, dry, covered (except the extreme margin) with hexagonal crowded warts, tawny, tan-coloured, sometimes very deeply fissured. Stem 4 inches high, or more, varying much in thickness, attenuated downwards, brownish. Tubes rose-coloured, decurrent. Substance rather tough.

I am unable to speak positively of the affinities of this species, but it appears to be allied to *B. alutarius* and *B. felleus.*

397. *B. scrobiculatus,* n. s.; pileo convexo fusco-purpureo subglauco-pruinoso; stipite incurvo grosse reticulato fusco; tubulis brevibus pallide fusco-purpureis. Hook. fil., Ser. 3, No. 8.

HAB. On soil in open places. Moflong, Khassya. June 29, 1850.

Inodorous. Pileus convex, very fleshy, rather tough, 2½–3 inches across, dry, deep purple-brown, with a somewhat glaucous bloom; flesh white, shaded with patches of purple-brown, very dark immediately beneath the cuticle. Stem 3 inches high, ¾–1 inch thick, attenuated below or clavate, dark brown, very coarsely reticulated. Tubes pale purple-brown, short, decurrent.

This is very nearly allied to *B. ustalis,* Berk., but differs in its more convex pileus, incurved stem, but especially in the purplish, not ochraceous pores. That, moreover, grows on the trunks of trees, and is tomentose rather than pruinose.

398. *Strobilomyces nigricans,* n. s.; minor; pileo convexo expanso obtusissimo, centro verrucis hexagonis exasperato, margine floccoso squamoso; contextu subsuberoso; stipite solido subæquali flexuoso floccoso-squamoso. Hook. fil., Ser. 3, No. 4. TAB. VI.

HAB. In woods. Kala-Panee, Khassya, 5000 feet. June 27, 1850.

Inodorous. Pileus 2½ inches across, convex, without any umbo, dry, of a dark purple-brown, as is the whole plant, inclining more or less to black, rough in the centre, with small hexagonal warts; the margin, which is thin, shaggy with floccose scales. Stem flexuous, scarcely 2 inches high, ½ an inch thick, shaggy like the margin of the pileus, solid, nearly equal. Pores adnate, middle-sized, tough, rather long.

This is a smaller species than the others, and tough like a *Polyporus.*

* *Hydnum auriscalpium,* L. Hook. fil., Ser. 3, No. 21.

HAB. On fir-cones. Myrung, Khassya, 6000 feet. July, 1850.

The specimens differ from the European in being "subtranslucent," but I cannot doubt that it is the same species.

399. *Lachnocladium Hookeri*, n. s.; mycelio tuberoso; stipite crasso rubente sursum diviso in ramos crassos; ramulis brevibus irregularibus apice emarginatis. Hook. fil., Ser. 3, No. 36.

Hab. Khassya mountains.

Inodorous, dry, opake, velvety. Mycelium tuberous, several inches thick. Stem 1½ inch high, nearly an inch thick, tinged with red, dilated above and divided into two or three coarse, ochraceous or dirty-yellow branches, which give off short, irregular branchlets of the same colour, and are sometimes trifid above. All the ultimate ramuli are emarginate.

Distinguished from all other described species by its very thick main branches. The mycelium too is very remarkable.

* *Clavaria Botrytis*, P. Hook. fil., Ser. 3, No. 37. Var. *concolor*.

Hab. Khassya mountains. 1850.

This agrees with *C. Botrytis*, except that the tips of the branches are not darker. It is a true *Clavaria*, being fleshy and brittle when fresh.

* *C. formosa*, P. Hook. fil., Ser. 3, No. 38.

Hab. Khassya mountains. 1850.

Exactly agreeing in colour with the plant of Holmskiold.

* *C. stricta*, P. Hook. fil., Ser. 3, No. 39.

Hab. Khassya mountains. 1850.

400. *Clavaria miltina*, n. s.; gregaria, fragilis; clavis cavis simplicibus acutissimis coccineis. Hook. fil., Ser. 3, No. 3.

Hab. On rotten timber in wet woods. Kala-Panee. Khassya mountains, 5000 feet. June 27, 1850.

Inodorous, dry, opake, smooth, brittle. Gregarious, 3 inches high, 2–3 lines thick, erect, undulated and rugose, sometimes a little incrassated at the base, extremely acute, simple at the apex, or slightly divided, hollow, bright scarlet.

This very curious species has somewhat the habit of *Calocera*, but its dry, opake, brittle substance at once removes it from that genus. It cannot be confounded with any published species.

Fungi described in the fourth Century now completed.

Agaricus *Anax*, B.
,, *blandulus, ib.*
,, *calvescens, ib.*
,, *discolor, ib.*
,, {*dryophilus*, Bull.,
var. *cæspitis.*
,, *colligatus*, B.
,, *cuspidatus, ib.*
,, *dentosus, ib.*
,, *descendens, ib.*
,, *discordis, ib.*
,, *euthelus, ib.*
,, *flavo-miniatus, ib.*
,, *fritillarius, ib.*
,, *implanus, ib.*
,, *incommiscibilis, ib.*
,, *latipes, ib.*
,, *macer, ib.*
,, *macrothelus, ib.*
,, *micromegas, ib.*
,, *phlegmaticus, ib.*
,, *placentodes, ib.*
,, *puberulus, ib.*
,, *radiatilis, ib.*
,, *ranunculinus, ib.*
,, *Sprucei, ib.*
,, *vinolentus, ib.*
Boletus *areolatus, ib.*
,, *delphinus*, Hook. fil.
,, *Emodensis*, B.
,, *fragicolor, ib.*
,, *furfuraceus, ib.*
,, *gigas, ib.*
,, *scrobiculatus, ib.*
,, *squamatus, ib.*
,, *ustalis, ib.*
Calocera *sphærobasis*, B.
Clavaria *miltina, ib.*
Coprinus *Hookeri, ib.*
,, *vellereus, ib.*
Cortinarius *Emodensis, ib.*
,, *flammeus, ib.*
,, *vinosus, ib.*
Depazea *mappa, ib.*
Exidia *bursæformis, ib.*
,, *straminea, ib.*
Favolus *intestinalis, ib.*
,, *tenerrimus, ib.*
Hydnum *gilvum, ib.*
Hygrophorus *fulvus, ib.*
,, *Pomona, ib.*
Hypocrea *grossa, ib.*
Lachnocladium *Hookeri, ib.*
Lactarius *princeps, ib.*
Laschia *subvelutina, ib.*
Lentinus *coadunatus*, Hook. fil.
,, *hepaticus*, B.
,, *Hookerianus, ib.*
,, *subdulcis, ib.*
Lenzites *rugulosa, ib.*
Lycoperdon *microspermum, ib.*
,, *sericellum, ib.*
Marasmius *caperatus, ib.*
,, *consocius, ib.*
,, *hæmatodes, ib.*
,, *Hookeri, ib.*
,, *inoderma, ib.*
,, *iridescens, ib.*
Mitremyces *viridis, ib.*
Panus *monticolor, ib.*
Paxillus *chrysites, ib.*
,, *pinguis, ib.*

Paxillus *sulphureus*, B.
Peziza *Darjeelensis*, *ib.*
,, *geneospora*, *ib.*
,, *herpotricha*, *ib.*
,, *macrotis*, *ib.*
,, *stilboidea*, *ib.*
,, *turbinella*, *ib.*
Phlebia *reflexa*, *ib.*
Physarum *iridescens*, *ib.*
Polyporus *cremoricolor*, *ib.*
,, *maculatus*, *ib.*
,, *ozonioides*, *ib.*
,, *platyporus*, *ib.*
,, *rubricus*, *ib.*
,, *umbilicatus*, *ib.*
Reticularia *enteroxantha*, B.
Russula *cinnabarina*, Hook. fil.
,, *grossa*, B.
Schizophyllum *umbrinum*, *ib.*
Sphæria *parmularia*, *ib.*
Stereum *Galeotti*, *ib.*
,, *rimosum*, *ib.*
Strobilomyces *montosus*, *ib.*
,, *nigricans*, *ib.*
,, *polypyramis*, H.fil.
Trametes *lobata*, B.
Trichocoma *paradoxum*, Jungh.
Ustilago *Emodensis*, B.
Xerotus *cantharelloides*, *ib.*

Notes on BELOOCHISTAN PLANTS; *by* J. E. STOCKS, M.D., F.L.S., *Assistant Surgeon, Conservator of Forests and Superintendent of Botanic Gardens, Bombay Establishment.*

PAPAVERACEÆ.

1. Papaver *cornigerum*, J. E. S.; caule ramoso multifloro cum foliis plus minus piloso, foliis bipinnatisectis lobulis seta terminatis, pedunculis adpresse setosis, sepalis densissime setosis ad apicem in cornua abrupte productis, petalis cuneatis phœniceis basi atro-maculatis, capsula ellipsoidea quinque-angulata, angulis serie setarum erecto-patentium echinatis, stigmate pileato fungiformi 4–6-radiato.
HAB. Doobund, in the hills between Kelat and Nooshky. No. 944.

CARYOPHYLLEÆ.

2. Acanthophyllum *grandiflorum*, J. E. S.; suffruticosum, humile, ramis dense intricatis cæspitosum, pube brevi rasa densa griseo-canescens, foliis persistentibus brevibus patulis confertis subulatis planis vel plano-triquetris apice spinoso-mucronatis nervo medio crasso subtus prominulo percursis, bracteis 8–12 ovalibus explanatis albo-marginatis mucronatis calyce multo brevioribus vacuis florem terminalem

imbricatim stipantibus, calyce pubescente striato elongato obconico-campanulato ad medium in lacinias lineares mucronatas everso-patentes trinerves fisso, corollæ amplæ petalis obtusis cum stylo et staminibus miniato-rubris.

HAB. The Berg Hills, near Quetta. No. 1041.

Very conspicuous from the fine large red flowers produced in profusion on the low tufts, and remarkable in its solitary terminal flower surrounded by empty bracts.—*Leaves* 4–5 lines long. *Calyx* 4 lines. *Petals* 7–8 lines long.

ZYGOPHYLLACEÆ.

3. Seetzenia *orientalis*, Dcne.

It may be noticed that the stamens, in this species at least, are not opposite, but alternate with the calyx-segments, as has been remarked previously by Major Vicary.

TEREBINTHACEÆ.

4. Pistachia *Khinjuk*, J. E. S.; arbor 10–20-pedalis, cortice lævi, partibus junioribus pubescentibus adultis glabratis, foliis 5–7–9-foliolatis, petiolo tereti, foliolis basi inæquilateris subfalcatis breviter petiolatis lanceolatis (basi attenuata) vel ovatis (basi plus minus rotundata) apice in caudam setaceam attenuatis vel rarius abrupte productis, fructu obovato subcompresso.—*Folia* 2½ pollices longa, 10–12 lineas lata.

Pistachia Khinjuk, *J. E. S. in Herb. n.* 719. Pistachia Terebinthus, *L.*, varietas?

HAB. Common in the mountains of Beloochistan from 4000 to 8000 feet, and known under the name of Gwun and Gulungoor. It is found in Affghanistan, and called Khinjuk and Shurumna.

Its fruit is eaten, and from its seeds an oil is extracted.

5. Pistachia *Cabulica*, J. E. S.; arbor 10–20-pedalis, cortice tuberculato, minute pubescens, foliis 5–7–9-foliolatis, petiolo ad apicem inconspicue subalato, foliolis subsessilibus angustis lanceolato-oblongis muticis, fructu rotundato compresso.—*Folia* 2 pollices longa, 5 lineas lata.

Pistachia Cabulica, *J. E. S. in Herb. n.* 1072. P. mutica, *Fisch. et Mey.?* P. Atlantica, *Desf.?*

HAB. Beloochistan hills and throughout Affghanistan.

It is called Kussoor, and its fruits and seeds used as those of the preceding species.

Both these *Pistachias* yield a resin which is used as a succedaneum for Mastic in Beloochistan, Affghanistan, Scinde, and I believe in Persia also. It is called in Scinde *Saht-i-kundiroo*, and in Affghanistan is known to the druggists as *Sakiz Khinjuk*. These trees are noticed by Griffith in his 'Affghan Journal' under the name of *Khinjuk*, and appear to have been regarded by him as species of *Xanthoxylon* (vide pp. 351, 412). *Pistachia Khinjuk* has large yellow galls, like an old worm-eaten tamarind-pod, and these are generally full of the resin. These Dr. Royle mentions (Himal. Botany, p. 178) as *Gool-i-Pista*, and the resin as *Aluk-ool-Unbat*. *Pistachia Cabulica* also has red excrescences like the comb of a cock, growing from the midrib on the underside of the leaf. Kæmpfer (Amœnitates, p. 414) mentions these trees as growing on the mountain Bunna, seven days' journey north of Bunder Abbas, and also about Shiraz, especially on a mountain near Majin one stage from Shiraz. The names he assigns to the trees are the same as those used in Beloochistan, allowing for dialect and pronunciation; one being called *Bun* or *Wun* (in Beloochistan, *Gwun*), and one *Kussoodán* (in Beloochistan, *Kussoor*). He mentions also the galls, and the resin, which is called *Kundiroon* by the Persians, or sometimes *Sakiz Sheereen* (*Masticha dulcis*), to distinguish it from *Olibanum*, which is called *Kundir* or *Sakiz Tulkh* (*Masticha amara*); and from Mastic itself, which is called *Kundir Roomee*, or *Sakiz Roomee* (*Masticha Turcica*). The *Khinjuk*, by which the tree is known in Affghanistan, is a slight alteration of *Wun-juk* or *Gwun-juk*. Forskal mentions this resin in his 'Materia Medica Kahirensis' (n. 23 among the Gums), as "Kuteerah Ajimee, Humrah, or Kusrooee, è Persia."

I cannot say absolutely that Kæmpfer's trees are identical with the ones just described from Beloochistan, but it is probable, from the similarity of the names, and the great resemblance which the Beloochistan flora has to that of South Persia. *Eremurus Persicus*, *Cousinia palmatiloba* and *tenella*, *Trichodesma Aucheri*, *Daphne acuminata*, *Tulipa chrysantha*, *Amygdalus furcatus*, *Sisymbrium Schimperi*, *Onobrychis cornuta*, *Scabiosa Oliverii*, *Echinospermum sessiliflorum* and others, *Dufresnia orientalis*, *Outreya carduiformis*, *Diarthron carinatum*, *Gentiana Oliverii*, *Juniperus Phœnicea*, *Cheiranthus crassicaulis*, *Rœmeria rhœadiflora*, *Brassica Kotschyi*, *Pycnocycla Aucheri*, *Otostegia*

Aucheri, *Moræa Sisyrinchium*; with species of *Scorzonera*, *Phagnalon*, *Haplophyllum*, *Ferula*, *Dorema*, *Caragana*, *Bongardia*, *Tetracme*, *Heterocaryum*, *Paracaryum*, *Iris*, *Derderia*, *Acantholimon*, *Acanthophyllum*, *Rheum*, and many others, may be mentioned as common to both countries.

Finally, it may be remarked, that most of the species of *Pistachia* produce galls, which have been used in dying in various countries; and all of them secrete spontaneously a scanty resinous exudation, and yield to incisions a more fluid product which afterwards inspissates.

LEGUMINOSÆ.

6. Dorycnium *calycinum*, J. E. S.; annuum, pusillum, pilis patentibus albo-villosum, foliis petiolatis, foliolis oblongis, stipulis subulato-setaceis, pedunculis 6–8-floris folio longioribus, bracteolis setaceis pedicellos breves bis superantibus, calycis tubo decolori extus villosissimo, laciniis linearibus elongatis tubum bis superantibus ad apicem herbaceis utrinque pilosis, corolla parvula alba calycem vix æquante, ovario biovulato, legumine plerumque monospermo stipitato rostrato ambitu rotundato lana gossypina tecto calycis ampliati lacinias medias attingente.

HAB. Near Khanuk, at the base of the mountain Chehel Tun. May, 1850. No. 1021.

7. Caragana *ambigua*, J. E. S.; suffruticosa, pubescens, foliis 2–3-jugis ellipticis mucronatis adpresse canescentibus, petiolis stipulisque spinescentibus, floribus solitariis, calycibus pubescentibus campanulatis dentibus tubo vix brevioribus, legumine pubescente oblongo breviter mucronato leviter curvato.

HAB. Upper Beloochistan, from 5000 to 9000 feet. No. 619*b*.

It is called *Shinaluk*.—Its flowers, which are large and conspicuous, are eaten by the Brahuis. *Legume* 1 inch long by 3½ lines wide.

8. Caragana *ulicina*, J. E. S.; suffruticosa, pubescens, foliis 2–3-jugis obovatis sæpe retusis mucrone inconspicuo vel omnino nullo adpresse et minute pubescentibus, petiolis stipulisque demum spinescentibus, floribus solitariis vel ex apice pedunculi binis, calycibus pubescentibus, dentibus tubo paulo brevioribus, legumine recto pubescente lineari acuminato.

HAB. Lower Beloochistan. No. 619 *a*.

Flowers much smaller than in the last species, and the legume quite straight, with a prolonged attenuated apex, 1 inch long, by 1½ lines wide.

9. Onobrychis *dealbata*, J. E. S.; cæspitosa, caulibus ex eadem radice plurimis abbreviatis, foliis 3–4-jugis approximatis, petioli basi expansa cum stipulis adnata densissime et molliter gossypino-sericea, foliolis rotundatis vel ovatis submucronatis margine subcallosis cum petiolo scapoque pilis adpressis candescentibus pagina superiore glanduloso-punctata, scapo folia multo superante, racemo denso ovoideo, floribus breviter pedunculatis, calycis dense albo-villosi dentibus subulatis plumoso-villosis tubo longioribus, legumine biloculari (loculo inferiore aspermo stipitiformi) disco lacunoso-rugoso gossypino margine anguste denticulato-cristato.

Hab. Upper Beloochistan, 6000 to 9000 feet. No. 1035.

10. Onobrychis *nummularia*, J. E. S.; annua, diffusa, caule abbreviato, stipulis petiolo adnatis, foliis radicalibus simplicibus vel 3–5-foliolatis, foliolis rotundatis a basi cuneata vel rotundata obovatis vel ovatis apice mucronatis supra pube adpressa velutinis (nervis ob glabritiem conspicuis) subtus canescenti-tomentosis, racemis plurifloris folia plus minus superantibus, calycis laciniis subulato-acuminatis plumosis, ovario biovulato-uniloculari falcato-lunato, legumine orbiculari biloculari pubescente ad discum foveolato interstitiis plus minus prominulis aliquando in aculeolos productis ad marginem duplici serie setarum innocuarum radiatim cincto, setis diametrum leguminis æquantibus araneose gossypinis.

a. Calycis segmentis corolla brevioribus, alis postice auriculatis, legumine pubescente. No. 843.

β. Calycis segmentis corollam dimidio supereminentibus, alis integris, legumine gossypino. No. 1165.

Hab. Pasht Khana in the Gundara Pass at 4000 feet, and over Upper Beloochistan above the passes.

Vexillum cream-coloured, netted with purple veins; *carina* cream-coloured. *Alæ* very small, hardly reaching above the claw of the carina.—The ovary of this plant is crescent-shaped, one-celled, and two-ovuled. As it ripens the two ends get bent on each other and it becomes horseshoe-shaped, and when quite mature it is so curved as to present a circular outline, with a false dissepiment separating the two seeds and making it bilocular.

11. Astragalus *sericostachyus*, J. E. S.; perennis, caulescens, erectus, caulibus albo-tomentosis, foliis 10–13-jugis, stipulis subulato-setaceis plumosis, foliolis ovatis vel ellipticis superne nisi ad marginem

glabris inferne pilis elongatis densissime et molliter tomentoso-villosis, pedunculis axillaribus foliorum dimidium attingentibus, capitulo gossypino ovoideo confertifloro pedunculum fere æquante, floribus subsessilibus, bracteis setaceis calycis tubum paulo superantibus, calycis densissime gossypini dentibus setaceis plumosis tubum excedentibus corolla paulo brevioribus.

Hab. Doobund, between Kelat and Nooshky. No. 873.

Flowers cream-coloured with a yellowish tinge (*ochroleucous*), and green veins. *Vexillum* and *carina* equal in height. *Wings* shorter than the carina.

Among "*Alopecuroidei*" this species may be known from *A. speciosus*, Boiss., by the long setaceous bracts and calyx-teeth, and by the densely cottony calyx. From *A. obcordatus*, Boiss., it is distinct in the ovate (not globose) capitulum, in the cottony pubescence, shape of leaflets, etc.

12. Rhynchosia *pulverulenta*, J. E. S.; diffusa, volubilis seu prostrata, pube brevi velutina tomentoso-canescens, foliis trifoliolatis, foliolis rhomboideo-rotundatis basi cuneatis subtus albo-glandulosis, racemis abbreviatis 5–10-floris, floribus breviter pedunculatis, bracteis pedunculum vix æquantibus, calycis segmento inferiore cæteris longiore et latiore, vexillo egibboso, legumine falcato basi attenuato dispermo seminum caruncula inconspicua.

Hab. Hills of Scinde and Lower Beloochistan. No. 658.

Flowers light yellow, with inconspicuous veins of the same colour.—The white glands on the underside of the leaf, the vexillum without a gibbous projection, and other marks, will distinguish this species.

13. Sophora *Griffithii*, J. E. S.; suffruticosa, ramis et calyce tomento raso candicantibus, foliolis 21–41 ovalibus vel obovatis plerumque retusis tomentoso-sericeis subtusque argenteo-velutinis, racemis terminalibus et lateralibus 10–20-floris, legumine moniliformi albo-pubescente lævi vel crista tuberculata (alam prænunciante) ad utramque suturam utrinque instructa.

Hab. Over Upper Beloochistan, and in Lower Beloochistan, as low down as 3000 feet in the Gundava Pass. No. 720.

It is called "Shampusteer" by the Brahuis, and many a desolate place is made gay in spring by the golden flowers and silvery leaves of this beautiful shrub. It belongs to the section *Eusophora*, and the alæ of the corolla have an additional and posterior auricle.

CUCURBITACEÆ.

14. Cucumis *cicatrisatus*, J. E. S.; caule scabro, foliis plus minus angulato-lobatis lobo terminali elongato, petiolis et limbo æquilongis, ovario pubescente striato subclavato truncato, collo inter ovarium et calycem nullo calyce scilicet e basi lata ad faucem contractam subconico tubo dentibusque æquilongis, peponida obovoidea turbinata vel pyriformi (sæpe obliqua uno nempe carpello sterili) glaberrima striis 10–12 viridibus impressis notata ad verticemque cicatricula calycis circumscissi conspicue annulata.

HAB. Cultivated in Scinde under the name of Wungo.

Its young fruits, when about 2¼ inches long and 2 inches in diameter, are eaten like the common Cucumber, and also when they are further advanced. When at the full size, they vary from 4½ to 6 inches in length, and from 3½ to 5½ inches in diameter, and are then kept for seed, for they never turn aromatic like the Melon (*Cucumis Melo*), or like the *Cucumis utilissimus* and *Cucumis Chate*. In the broad base of the calyx, which, falling off, leaves a mark on the fruit, this species resembles the Melon, but is known by the elongated terminal lobe of the leaf, by the petioles never being longer than the leaf, by the sessile flowers, by the short and linear (not very long and filiform) teeth of the calyx, and by the insipid pyriform or inversely egg-shaped fruit, which, when mature, is dead white in colour, with striæ of a darker hue. It may be near *Cucumis Dudaim*.

15. ZEHNERIA.—*Bryonia Garcini* (Willd.), as Dr. Wight long ago observed ('Illustrations,' vol. ii. p. 30), comes within or near the limits of *Pilogyne*, Schrader, which Endlicher includes in his genus *Zehneria*. Garcin's plant, however, and a nearly allied species, *Bryonia fimbristipula*, Fenzl, will form, at least, a distinct section, agreeing with *Zehneria* in the disposition of the male and female flowers, the straight anther-cells, and the general habit, but differing in the presence of a peculiar and conspicuous bract, and in the ovary having only two cells, which each mature a seed, an undivided style, and an obscurely bilamellate stigma. However, the only materials I have for comparison are specimens of *Zehneria Mysorensis* (Wight in Illust. vol. ii. p. 30), and the figure in Wight's 'Icones,' t. 758.

ZEHNERIA, § Bractearia.—*Bractea florifera ampla, plerumque cordata, ciliata. Flores monoici. Corolla rotata. Genitalia exserta.*

Ovarium biloculare. Stylus indivisus. Stigma pileatum, obscure bilamellare. Fructus baccatus. Semina 1–2.

(1.) Zehneria *Garcini*, J. E. S.; caule scabro demum glabrato, foliis palmato-3–5-lobis, lobis dentatis, dentibus piligeris, pagina utraque setis brevissimis hamatis scabra, bractea florifera cordata ciliata, fructu inverse reniformi seu malleiformi dispermo, seminibus contorto-obliquis hinc subconvexis inde canaliculato-sulcatis margine obtuso.

Bryonia Garcini (Willd.), *Wight et Arnott*, p. 344. Momordica? *Seringe.* Pilogyne? *Wight.*

HAB. Tropical India, Ceylon.

Seeds narrow, 3½ lines by 1¼, twisted, with one of the faces channelled, and with the margin straight and thick and rounded. *Fruit* orange-red, hammer-shaped.

(2.) Zehneria *cerasiformis*, J. E. S.; caule foliis et bractea ut in *Zehn. Garcini*, fructu globoso dispermo, seminibus scutelliformibus hinc convexis inde concavis margine acuto tenui incurvato.

Bryonia fimbristipula, *Fenzl, inedit.*

HAB. Nubia (*Kotschy*, No. 205). Northern Guzerat and Scinde. No. 29.

Seeds broad, 4 lines by 2, with a very sharp thin margin, turned up so as to make the seeds cupped, like clotted blood in a bleeding-basin. *Fruit* like a cherry in shape and colour. I think Fenzl's specific name should be passed over, because it points to a structure not peculiar to the species. If, however, his name had been published in a book with a diagnosis, this change could not have been allowed; but any one is at liberty to reject the inedited names of Hochstetter, Steudel, and others, which are merely printed on labels, because they are unpublished, and not in a shape which renders them accessible to the student. At the same time it is courtesy to adopt them when applicable.

UMBELLIFERÆ.

16. Dorema *aureum*, J. E. S.; caule procero striato subaphyllo, foliis radicalibus pube brevi conspersis demum glabratis ternato-tripinnatisectis, segmentis ultimis lanceolatis decursivis paralleliveniis plus minus lobulatis, paniculis ramosissimis pubescentibus, mericarpiis ellipticis glabris jugis filiformibus integris.

HAB. Doobund, and elsewhere in Upper Beloochistan, yielding a bitter white gum, much like the Ammoniacum of the shops. No. 985.

The plant often stands six feet high, very conspicuous from the golden hue of the loose and much-branched panicles. As far as I can judge from an indifferent specimen, the mericarps of *Dorema Aucheri*, Boiss., seem to differ in the juga not being continuous elevated lines, but interrupted and tuberculate.

(*To be continued.*)

Kew Gardens Museum: TALLOW-TREE, *and* INSECT WAX of China.

Time was, and not many years ago, when animal fat and animal wax were exclusively employed in the manufacture of candles; now, thanks to our increased and daily increasing knowledge of the properties of plants, by far the majority of our candle-makers employ vegetable tallow and vegetable wax. Many of our readers are old enough to remember the surprise that was occasioned by the discovery of Humboldt, of the Wax Palm (*Ceroxylon Andicola*, now cultivated in the Royal Gardens), whose trunk is coated with fine wax, which exudes to the surface. Other Palms of South America yield a ceraceous substance in the same way, and the produce is an extensive article of commerce. One has only to read the highly interesting lecture delivered at the Society of Arts, on the 5th of February, 1852, by G. F. Wilson, Esq., (afterwards printed by Lewis and Son, Finch Lane,) 'On the Stearic Candle Manufacture,' where nine hundred hands are employed in their works at Vauxhall alone, and where they have lately been making one hundred tons (£7000 worth) of candles weekly, from wax and tallow of *vegetable origin*, to be satisfied of the vast commercial importance of these two comparatively new substances. This Company has done us the favour to present our Museum of Vegetable Products with a full series of the vegetable waxes and tallows employed by them. At p. 29 of the above-mentioned pamphlet, Mr. Wilson directs attention to two of these substances. "On the table," he says, "are specimens of crystalline wax, I believe *Rhus succedaneum*, from China, and of the vegetable tallow of the *Stillingia sebifera*, also from China." These are what are here noticed as the "Insect-wax of China," and the Tallow-tree of China; and being anxious to obtain all the information in our power respecting them, Dr. Wallich has kindly directed our attention to the seventh volume of the 'Journal of the Agricultural and Horticultural Society of India' (Calcutta, 1850) for an extremely interesting account of them, and respecting both of which very little had been previously known, beyond the boundaries of the Celestial Empire. The memoir is entitled "Uses of the *Stillingia sebifera*, or *Tallow-tree*, with a notice of the *Pe-la* or Insect-wax of China; by D. J. Macgowan, M.D." From this we collect that the *Stillingia sebifera* is cultivated in the provinces of Kiangsi, Kongnain and Chehkiang,—so extensively near Hangchan, where some of the trees are several hundred years old, that all the taxes are paid with its produce. It grows alike on low alluvial plains, on the rich mould of canals, and on the sandy beach, and the trunks are sometimes made to fall over rivulets, forming convenient bridges. Its wood is hard, durable, and may be easily used for printing-blocks and various other articles; its leaves are employed as a black dye. But it is chiefly from the two proximate principles which are the constituents of *animal tallow*, the "*stearine*" and "*elaine*" contained in the fruit, the plant is so much valued; and, finally, the refuse of the fruit, after extracting the tallow, is employed as fuel and manure. The "nuts," or capsules, when ripe, are gently pounded in a mortar to loosen the seeds from their shells, from which they are separated by sifting. To facilitate the separation of the white sebaceous matter enveloping the seeds, they are steamed in tubs with convex open wicker bottoms, placed over cauldrons of boiling water; when thoroughly heated, they are reduced to a mash in a mortar, and thence transferred to bamboo sieves, kept at a uniform temperature over hot ashes. This operation of steaming and sifting is repeated, as the first does not deprive the seeds of all their tallow. The article thus obtained becomes a solid mass on falling through the sieve, and, to purify it, it is melted and formed into cakes for the press; these receive their form from bamboo hoops, a foot in diameter and three inches deep, which are laid on the ground over a little straw. On being filled with the hot liquid, the ends of the straw beneath are drawn up and spread over the top, and, when of sufficient consistence, are placed with their rings in the press. This apparatus is of the rudest description, constructed of two large beams placed horizontally so as to form a trough capable of containing about fifty of the rings with their sebaceous cakes; at one end it is closed, and at the other adapted for receiving wedges, which are successively driven into it by ponderous sledge-hammers wielded by athletic men. The tallow oozes in a melted state into a receptacle below, where it cools. It is again melted and poured into tubs, smeared with mud, to prevent its adhering. It is now marketable, in masses of about eighty pounds each, hard, brittle, white, opake, tasteless, and without the odour of animal tallow; under high pressure it scarcely stains bibulous paper; melts at 104° Fahr. It may be regarded as nearly pure stearine; the slight difference is doubtless owing to the admixture of oil expressed from the seed in the process just described. The seeds yield about eight per cent. of tallow, which sells for about five cents per pound.

The process for pressing the oil (*elaine*), which is carried on at the same time, is as follows. This is contained in the *kernel* of the nut, the sebaceous matter which lies between the shell and the husk having been removed in the manner described. The kernel, and the husk covering it, is ground between two stones, which are heated, to prevent clogging from the sebaceous matter still adhering. The mass is then placed in a winnowing machine, when the chaff being separated, the white oleaginous kernels, after being steamed, are placed in a mill, to be mashed. This machine is formed of a circular stone groove, in which a solid stone wheel revolves perpendicularly by the aid of an ox. Under this ponderous weight the seeds are reduced to a mealy state, steamed in the tubs, formed into cakes, and pressed by wedges in the manner already described; the process of mashing, steaming, and pressing being repeated with the kernels likewise. The kernels yield about thirty per cent. of the oil, which is called "*Ising-yu*," and sells for about three cents per pound, and answers well for lamps, though inferior for this purpose to some other vegetable oils in use. The cakes which remain after the oil has been pressed out, are much valued as a manure, particularly for tobacco-fields, the soil of which is rapidly impoverished by the Virginian weed.

The consumption of candles in China is very great, in their religious ceremonies, etc., as the gods cannot be worshiped acceptably without candles, and no one ventures out after dark without a lantern. With trifling exceptions, these candles are made, and by dipping, of the tallow or stearine of the *Stillingia sebifera*. The wicks are made of rush coiled round a stem of a coarse grass; when of the required diameter they receive a final dip into a mixture of the same material and "*Insect-wax*," by which their consistence is preserved in the hottest weather. They are generally coloured red by a minute quantity of Akanet-root

(*Anchusa tinctoria*, brought from Shangtung). Verdigris is employed to dye them green. Stearine candles cost about 8 cents the pound.

Pe-la, or *Insect-wax*.

Prior to the thirteenth century bees'-wax was employed as a coating for candles in China; but about that period the white *wax-insect* was discovered, since which time that article has been wholly superseded by the more costly but incomparably superior product of this little creature, respecting the nature and characters of which, however, authors are at variance. From Abbé Grossier's description of it, it has been suspected to be a species of *Coccus*, but Sir George Staunton has described it as of the *Cicada* family in Entomology (*Flata limbata*). Chinese writers speak of it as an apterous insect. From the "Puntzau" and the "Kiang-fangpu," herbals of high authority in China, Dr. Macgowan has extracted the following information respecting the waxy substance, *Pe-la*, either yielded by this animal or exuded by the plant in consequence of the insect-puncture. Authors are not agreed on this point.

The insect feeds upon an evergreen shrub, the *Ligustrum lucidum**, found throughout Central China, from the Pacific to Thibet; but the insect chiefly abounds in the province of Sychuen. Much attention is paid to the cultivation of this tree; extensive districts of country are covered with it, and it forms an important branch of agricultural industry. In the third or fourth year of the planting it is *stocked* with the insect by man. In a few days after being tied to the branches, the nests swell, and innumerable white insects, the size of nits, emerge and spread themselves over the plant, but soon descend to the ground, where, if they find any grass, they take up their quarters. If they find no congenial resting-place below, they reascend, and fix themselves to the lower surface of the leaves, where they remain several days, when they repair to the branches, perforating the bark to feed on the fluid within. They soon attain a somewhat large size. Early in June they give to the trees the appearance of being covered with hoar-frost, being "*changed into wax;*" soon after, they are sprinkled with water (probably that they may be the more easily detached) and scraped off. If this gathering be deferred till August, they adhere too firmly to be easily removed. Those which are suffered to remain stock the trees the ensuing season, secrete a purplish envelope about the end of August, which at first is no larger than a grain of rice, but as incubation proceeds it expands and becomes as large as a fowl's head. This takes place in spring, when the nests are transferred to other trees, one or more to each, according to their size and vigour, in the manner already alluded to. On being scraped from the trees the crude material is freed from impurities by spreading it on a strainer covering a cylindrical vessel, which is placed in a cauldron of boiling water. The wax is received into the former vessel, and, on congealing, is ready for market.

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* Figured in 'Botanical Magazine,' tab. 2565, by Dr. Sims, twenty-seven years ago, where it is said "a vegetable wax is procured from the berries in China." Mr. Fortune, however, tells us that after careful inquiry on the matter, in districts where this shrub abounds, he could not learn that any such substance is yielded by it. On the contrary, he has brought home with him a deciduous tree as the true plant which yields the wax in question. It is now living at the garden of the Horticultural Society, but is not in a condition to enable the genus or family of the plant to be determined.

This *Pe-la*, or white wax, in its chemical properties is analogous to purified bees'-wax, and also spermaceti, but differing from both in the opinion of Dr. Macgowan. It is perfectly white, translucent, shining, not unctuous to the touch, crumbles into a dry inadhesive powder between the teeth, with a fibrous texture, resembling fibrous felspar; melts at 100° Fahr., is insoluble in water, dissolves in essential oil, and is scarcely affected by boiling alcohol, the acids, or alkalies. This wax costs at Ningpo from 22 to 25 cents per pound. The annual product of this humble creature in China cannot be far from 400,000 pounds, worth more than 1,000,000 Spanish dollars. For particulars of the chemical properties of this wax, see the volume of Philosophical Transactions for 1848, where Mr. C. Brodie has a valuable analysis, "On the chemical nature of a Wax from China." In the 'Comptes Rendus' for 1840, tom. 10, p. 618, M. Stanislaus Julien considers this wax to be derived from three species of plants: 1, *Niu-tching* (*Rhus succedaneum*); 2, *Tong-tsing* (*Ligustrum glabrum, L. lucidum ?*); and the *Choui-kin*, supposed to be a species of *Hibiscus*.

BOTANICAL INFORMATION.

Voyage of CAPTAIN DENHAM, R.N.

We have occasion in our present Number to speak of the return of H.M. Surveying-ship Herald, from the North Pacific, in 1851. She has already been refitted, and has sailed under the command of Captain Denham, R.N. (accompanied by a small steam-ship as tender), on a surveying voyage to the South Pacific Ocean, having especially in view the survey of the Fijee Islands, New Caledonia, etc. This may be considered as a continuation of the survey of the late Captain Owen Stanley, R.N., in H.M.S. Rattlesnake. In that survey, chiefly among the Papuan Islands, Mr. Macgillivray (who lately published the account of the voyage) was appointed Naturalist, and he brought home a beautiful collection of plants, and most extensive collections in Zoology. The same gentleman is transferred, with the same duties, to the Herald; and, thanks to the Admiralty, and to Captain Denham, the scientific staff is increased by the appointment of Mr. Milne as Botanist and Assistant Naturalist, from the Royal Gardens of Kew. We know from what the Naturalists of the United States Exploring Expedition are reported to have done in the Fijee Islands, and from what was done more recently by Mr. Moore, of the Botanic Gardens, Sydney, during the short visit he paid to New Caledonia in H.M.S. Havana (Captain Erskine), that a rich field for Botany is open to the Naturalists of the Herald on the present occasion. We are sure that nothing will be wanting on the part of the commander of the expedition that can contribute to its success in all departments of science.

MR. WM. GARDINER, *of Dundee.*

Few of our readers but are acquainted with the botanical writings and the beautifully-prepared specimens of Scottish plants by Mr. Wm. Gardiner, of Dundee. Like his predecessors in the same career, Don and Drummond, his mind has been more set on studying the works of nature than on laying by a provision against a time of sickness and old age; and now it has pleased Providence to prostrate him with severe illness, at a time when, we have reason to know, he is wholly dependent for support on what a few personal friends and others have done for him. Should this notice induce any one to contribute to the wants of this most deserving person, donations will be thankfully received on his behalf by James Scrymgeour, Esq., 11, Reform-street, Dundee.

Death of PROFESSOR SCHOUW.

"Denmark has again lost one of her eminent men of science. Professor Joakim Frederick Schouw died yesterday forenoon, in his 64th year. His activity as regards science in general was very extensive; although natural history was his proper sphere, and highly is it indebted to him. Professor Schouw took an active part in all political questions; and the high value which his country placed on his views, and appreciation of them, is sufficiently manifest by his being selected as President both for the National Assemblies and the Legislative Councils of his country. His high public worth was equally acknowledged in foreign countries, and he died universally beloved and honoured."—*Berlingske Gazette* for Thursday, the 29th April.

NOTICES OF BOOKS.

SEEMANN, BERTHOLD: *The* BOTANY *of the Voyage of* H.M.S. HERALD, *under the command of* Captain Henry Kellett, R.N., C.B., *during the years* 1845–51. Part I. 4to. Reeve and Co. (Published under the Authority of the Lords Commissioners of the Admiralty.) With 10 Plates.

We have here, thanks to the liberal views of the Lords Commissioners of the Admiralty, a portion of the scientific results of one of the many surveying voyages undertaken by our Government. Since 1825 three of her Majesty's ships have been successively employed in surveying the West Coasts of America, and other countries in the Pacific; and each ship was supplied with Naturalists. 1. H.M.S. 'Blossom,' commanded by Captain Beechey; Messrs. Lay and Collie, Naturalists. The botanical results of this voyage were published by Messrs. Hooker and Arnott in 1841. 2. H.M.S. 'Sulphur,' Captain Sir Edward Belcher; Mr. Hinds, Naturalist, assisted by Mr. Barclay (sent out from Kew) and Dr. Sinclair. Mr. Bentham published the 'Botany of the Voyage of the Sulphur' in 1844. The third and last voyage, to which we now allude, is that of H.M.S. 'Herald,' under the command of Captain Kellett, a gentleman who has singularly promoted every department of science, during a peculiarly interesting voyage of six years' duration, and extending to very high arctic regions. Mr. Thomas Edmonston, a zealous botanist, native of one of the Shetland Islands, of which he has published a Flora, in part from materials collected at a very early age, embarked as Naturalist. The duties of the survey in the Pacific had scarcely commenced, when this promising young man was killed at the mouth of the river Sua, coast of Ecuador, by the accidental discharge of a gun. His place was ably filled, at the recommendation of the Director of the Royal Gardens of Kew, by Mr. Berthold Seemann, who joined the Herald at Panama, in January, 1847, having crossed the isthmus to that city.

On the return of the Herald in 1851, Captain Kellett obtained the sanction of the Admiralty for the publication of the Natural History of the voyage, and Mr. Seemann undertook the botany, of which the present is the first of ten parts to which the work will extend. It will be divided into five distinct Floras. 1. The Flora of Western Eskimaux-land. 2. The Flora of North-western Mexico. 3. The Flora of the Isthmus of Panama. 4. The Flora of Southern China (to include the collection of Dr. H. Hance). 5. Plants collected in the Hawaiian Islands, Peru, Ecuador, and Kamtchatka.

The present number commences with a "Summary of the Voyage;" "An Historical Notice" and an "Introduction" to the Flora of Eskimaux-land follow. Then a "Synopsis," or rather catalogue of the species, with synonyms, station, and occasional observations, together with the specific character of the very few little known or ill-defined species; the whole amounting to 315 species. And lastly, there is a list of the plants brought home from recent Arctic Voyages by Captain Pullen (a very extensive collection, 174 species of phænogamic plants), Captain Penny (collected by Dr. Sutherland, 45 species), and Mr. Ede (26 species). The "Introduction" will be read with much interest, especially the account of the ice-cliffs in Kotzebue Sound, and which is further illustrated by a beautifully coloured plate. So completely have these Arctic regions been now explored by our navigators and travellers, that neither in Mr. Seemann's Catalogue of Western Eskimaux-land plants, nor in the lists of Captains Pullen and Penny and Mr. Ede, is there *one* newly discovered plant! The present number is accompanied by a neat map of the country described, including the adjacent lands and seas. The Botanical Plates are, first, the curious *Tetrapoma pyriforme*, Seem. (more properly Tetrapoma barbareæfolium, *Turcz.*), *Stellaria dicranoides*, Fenzl., *Dianthus repens*, Willd., *Claytonia sarmentosa*, C. A. Mey., *Artemisia androsacea*, Seem. (A. glomerata, *Hook. et Arn.*), *Saussurea subsinuata*, Ledeb., *Eritrichium aretioides*, Alph. De Cand., *Dodecatheon frigidum*, Cham., and *Salix speciosa*, Hook. et Arn.

The next portion, in a state of great forwardness, by Mr. Seemann, viz., "The Flora of North-western Mexico, including the States of Chihuahua, Durango, Sinaloa, and Talisco," will contain many new and curious plants. The readers of our Journal are already familiar with Mr. Seemann's clever notices of his travels, in these and other regions, given in our pages.

Class-book of Botany; being an Introduction to the Study of the Vegetable Kingdom; by Dr. Balfour, M.D., etc. Edinburgh. 8vo. 1852.

In Dr. Balfour's 'Class-book of Botany,' the author seems to have exhausted every attainable source of information. Few, if any, works on the subject contain such a mass of carefully-collected and condensed matter, and certainly none are more copiously, or, on the whole, better illustrated, upwards of 1050 woodcuts adorning 350 octavo pages. The subjects of structural and morphological botany are treated, in Dr. Balfour's usual manner, with the greatest care and pains; each point is conscientiously studied, and the results placed before the student include a mass of research, generally speaking, exceedingly well combined and arranged.

As a class-book it appears overdone, however; the details are much too numerous, and interfere with that simplicity and lucidity which should form the chief recommendations of a volume for the use of the student. The medical student, especially, has generally but four months in which to acquire a knowledge of botany; in that time he can fix the outlines only of the science in his mind, except, indeed, he be possessed of extraordinary powers of memory; however advantageous, therefore, it may be, that all the details in question be placed before him, it is very requisite that he should be able to know which of them are most important, and to select the essentials in the first place.

Were the elementary education of a medical man what it ought to be, Dr. Balfour's Class-book would fill the office it should during the student's subsequent medical education. It is quite clear that the rudiments of botany and chemistry, at least, should be acquired by the youth intended for the medical profession, long before he commences his finishing education. This is as obvious as that the first books of Euclid and the rules of Algebra must be learned before the severe studies of a civil engineer are commenced. But it is unfortunately wholly neglected. The youth, fresh from school or college, with a competent or indifferent knowledge of Latin, Greek, and, perhaps, of the modern languages, enters upon a four or five years' course of medical, anatomical, surgical, obstetrical, etc., studies, besides a cramming of natural history, chemistry, botany, and animal physiology, of the very existence of which, as studies, he had hardly a conception, and for which his previous education has often rather unfitted him than otherwise. These studies are consequently discarded as soon as the compulsory examination is passed. Having been attained under every disadvantage as to time and opportunity, the smattering acquired is only retained as long as necessary, and very grudgingly for so long. The consequence is, that out of certainly not less than 500 young men of education, who are annually instructed in botany in our universities, schools, and hospitals, not five retain any knowledge of the subject in after-life, or even show any disposition to return to it, let their opportunities be ever so great.

This implies no reflection on our professors, least of all on Dr. Balfour, one of the most popular, pains-taking, and successful of all our teachers of botany; but it shows that a class-book, the best adapted to the medical student of the present day, should not be too comprehensive, or, if it is so very full, some power of discriminating the essential from the accessory should be added to it, as is done in the Cambridge mathematical class-books. Dr. Balfour's would also gain much in clearness by judicious condensation, and a terser, less complex phraseology when treating of individual points, which are often discussed in a rambling manner and are loaded with technical terms, the excellent details requiring to be grouped in many cases. In this respect Dr.

Balfour's Class-book contrasts unfavourably with Dr. Lindley's elementary works, which are models of conciseness, precision, and clearness. Lastly, a little more decided tone in points of doubt or difficulty, and an expression of Dr. Balfour's own views, would have been more satisfactory to most readers. In the course of so many years' experience as teacher and observer, some facts, as worthy of record as many he quotes, must have come under the author's own notice; but there is a lack of original observation throughout. Dr. Balfour's students, we know, have the benefit of his great experience, and we should like to enjoy the same advantages through a work which is so full of admirable matter, agreeable and instructive.

We have purposely abstained from indicating the comparatively trifling drawbacks in the text of the work, and for the same reasons shall speak of the woodcuts as a whole also, and give them unqualified praise: most of them are beautiful, some of them (not a few) exquisite, and we hardly know whether to admire most the industry and zeal of the author, or the spirit and liberality of the publisher. We wish them both heartily success, and take leave of the work with less regret from knowing that a Part II. is to follow.

DR. J. D. HOOKER: *Flora of New Zealand.*

We have the pleasure of assuring our readers that the above-mentioned Flora is in a very advanced state, as to plates and manuscript and the printing of the first of the five parts announced by Messrs. Reeve as destined to complete the work. Each number (in quarto) will contain twenty plates (coloured or plain), and eighty pages of letterpress. It is generally known that this publication forms part of the Botany of the "Antarctic Voyage," under the command of Captain Sir James Ross, and will be followed by the Flora of Van Diemen's Land.

The "New Zealand Flora" will contain descriptions in English and Latin, with copious observations, botanical, geographical, and economical (in English) of the genera and species of plants inhabiting the country. Besides the collections formed by Dr. Hooker himself, materials for this important work are derived from the British Museum and the Herbarium of Sir W. J. Hooker, and various other sources. The *Mosses* will be described by W. Wilson, Esq.; the *Hepaticæ* by W. Mitten, Esq.; the *Algæ* by Dr. Harvey; the *Fungi* by the Rev. M. J. Berkeley; and the *Lichens* by the Rev. C. Babington.

Enumeration of a small Collection of Fungi from BORNEO; *by the* REV. M. J. BERKELEY, M.A., F.L.S.

The Fungi which are named in the present notice were placed in the hands of Sir W. J. Hooker by Dr. Livesay. They had, unfortunately, suffered very much from the attacks of insects, but the greater part were still sufficiently entire to admit of being ascertained. The species, with only a single exception—as far, at least, as they are capable of recognition—have already been described, but it has been thought advisable to publish the list, as they are the only fungi which have at present been received from Borneo, and they will afford some materials for the consideration of the geographical distribution of species.

The species identified are thirty-four in number. Of these, no. 1 is undescribed; no. 2 has been found in New Ireland; no. 3, 14, 15, 16, 20, 21, 22, are Ceylon species; no. 25, 27, 30, occur in the Philippines; no. 12, 13, 23, 31, are Indian island species, no. 28, Mauritius, no. 10, if really identical, Bahia, and the remaining fifteen either cosmopolites or universal inhabitants of tropical countries. With the single exception then of no. 10, which is somewhat doubtful, as the only specimen preserved is old and in very bad condition, the collection presents no anomaly, but is made up of species which more complete researches will probably prove to be common to most of the Indian islands. Some of the species, such as *Polyporus zonalis*, occur in Sikkim, but this species is also found in Cuba. No. 19, originally described from Swan River and Van Diemen's Land, may possibly be only a form of *P. igniarius*, but supposing it a good species, I am inclined to think it has a wide geographical distribution.

1. *Agaricus* (Crepidotus) *columellifer*, n. s.; pileo resupinato crispo villoso, lamellis umbrinis e columella centrali villosa radiantibus.

HAB. On bark.

Pileus $\frac{1}{3}$ of an inch broad, entirely resupinate; margin free all around, villous, white, crisped. Gills radiating from a short white villous columella, the remains of the infant stem, pale umber, somewhat forked, distant, narrow; interstices nearly even.

This species belongs to that groupe which has the pileus, when young, in the normal position, but in which it soon becomes inverted, resupinate, firmly attached to the matrix, the stem meanwhile breaking off, and in general becoming wholly obsolete, but in the present case retained in the form of a little columella.

2. *Cantharellus partitus*, Berk. in Lond. Journ. of Bot. vol. i. p. 453. tab. 15.

There is but a single specimen in a very bad state, just twice the size of the New Ireland fungus. Better materials might possibly afford ground for its proposition as a new species, since the veins are scarcely at all marked, though the upper surface is striate, exactly as in *P. grammocephalus.* The species belongs rather to *Craterellus*, as proposed by Fries in the 'Epicrisis,' than to *Cantharellus*.

3. *Lentinus pergameneus*, Lév. Ann. d. Sc. Nat. 1846, p. 117.

Two other species are in the collection, but too decayed to admit of their determination.

4. *Lenzites repanda*, Fr. Ep. p. 404.

5. *L. striata*, Fr. Ep. p. 406.

There is also a single specimen of a whitish or pale wood-coloured species, resembling somewhat *L. aspera*, but too much injured by insects to exhibit all its characters.

6. *Polyporus Boucheanus*, Fr. Ep. p. 438.

7. *P. lucidus*, Fr. Ep. p. 442.

8. *P. Amboinensis*, Fr. Ep. p. 442.

9. *P. auriscalpium*, Pers. in Freyc. Voy. t. 1. fig. 5.

As I have no type of this species, which is very imperfectly described, and have no opportunity of referring to the original specimen, I subjoin a description of what is before me, and which agrees very well with Persoon's figure.

Pileus 1–2 inches across, reniform or elliptic, but always truly lateral, though sometimes apparently central from the confluence of the margin, at first opake, as in the following species, and most minutely pulverulent or velvety, whence it has a somewhat ferruginous aspect, at length smooth and deep brown, rugose, zoned, generally convex, but varying greatly in sculpture; margin often contracted; cuticle hard, thin, brittle, scarcely truly laccate; substance ferruginous. Stem several inches high, 1½ line thick, annotinous, or at least appearing as if increasing in length at irregular intervals, at first opake and pulverulent, and then smooth like the pileus, dark brown externally, extremely hard and brittle, but furnished within with a soft pith. Hymenium concave, white, then pale brown. Pores extremely minute, punctiform, all but invisible to the naked eye.

The shape of the pileus is just like that of *Hydnum auriscalpium.* It is far smaller than any form of *P. Amboinensis*, and not truly laccate or at any rate resinous.

10. *P. opacus*, Berk. et Mont. in Ann. d. Sc. Nat. 1849.

11. *P. sanguineus*, Fr. Ep. p. 444.

12. *P. flabelliformis*, Kl. in Linn. vol. viii. p. 483.

13. *P. affinis*, Nees, Nov. Act. vol. xviii. t. 4. f. 1.

14. *P. discipes*, Berk. in Hook. Lond. Journ. of Bot. vol. vi. p. 499.

A sterile state in which only very imperfect pores have been formed, so as to resemble greatly *Stereum crocatum*, Fr., but more rigid.

15. *P. rubidus*, Berk. in Lond. Journ. of Bot. vol. vi. p. 500.

The specimens are in an old state, and have not only entirely lost their downy coat, but are shining and prettily zoned, and of a delicate fawn shaded with darker tints. The hymenium too in some cases has become brown. Still I have no doubt about the species: the spores are perfectly alike, as is also the colour of the corky tissue. The same change in fact has taken place which occurs in *P. anebus*.

16. *P. anebus*, Berk. in Lond. Journ. of Bot. vol. vi. p. 504.

17. *P. australis*, Fr. Ep. p. 464.

18. *P. applanatus*, Fr. Ep. p. 465.

19. *P. rimosus*, Berk. in Lond. Journ. of Bot. vol. iv. p. 54.

20. *P. holosclerus*, Berk. in Lond. Journ. of Bot. vol. vi. p. 501.

21. *P. zonalis*, König (sub *Boleto*) Ann. of Nat. Hist. vol. x. p. 375.

22. *P. ferreus*, Berk. in Lond. Journ. of Bot. vol. vi. p. 502.

23. *P. Persoonii*, Mont. in Bel. Voy. p. 147. *P. scabrosus*, Fr. Ep. p. 469.

24. *P. hirsutus*, Fr. Ep. p. 477.

25. *Trametes badia*, Berk. in Lond. Journ. of Bot. vol. i. p. 151.

More distinctly zoned than in the Philippine Island plant, and with rather smaller pores; in fact, making a closer approach to *T. hydnoides*, but without any fibres on the pileus, unless indeed their absence is due to extreme age.

26. *T. occidentalis*, Fr. Ep. p. 491.

27. *T. versatilis*, Berk. in Lond. Journ. of Bot. vol. i. p. 150.

28. *Stereum involutum*, Klotzsch, in Linn. vol. vii. p. 499.

Two forms occur, one exactly like the plant of Klotzsch, the other resupinate.

29. *S. rubiginosum*, Fr. Ep. p. 550.

30. *Cladoderris dendritica*, Pers. in Freyc. Voy. t. 1. f. 4.

31. *Irpex flavus*, Klotzsch, in Linn. vol. viii. p. 488.
32. *Exidia Auricula-Judæ*, Fr. Ep. p. 590.
33. *Hypoxylon concentricum=S. concentrica*, Bolt.
34. *H. polymorphum=S. polymorpha*, Ehr.

FLORULA HONGKONGENSIS: *an Enumeration of the Plants collected in the Island of Hong-Kong, by* Major J. G. Champion, 95*th Reg.*, *the determinations revised and the new species described by* GEORGE BENTHAM, ESQ.

(*Continued from p.* 123.)

HAMAMELIDEÆ.

1. Rhodoleia *Championi*, Hook., Bot. Mag. t. 4509.

Happy Valley woods. At each of the ovaries within the head of flowers a pearl-like drop of moisture forms, which increases the gorgeous appearance of this fine plant.

2. Liquidambar *Chinense*, Champ., sp. n.; foliis ovali-oblongis vix acuminatis calloso-serratis in petiolum brevem angustatis coriaceis, racemis terminalibus, amentis superioribus masculis ovoideis infimo fœmineo longius pedicellato globoso.—*Arbor* excelsa, inflorescentia excepta, glabra. *Ramulorum* floriferorum *gemmæ* obtectæ squamis numerosis imbricatis, exterioribus brevis siccis, interioribus semi pollicaribus extus tomentellis. *Folia* alterna, 3–4 poll. longa, 1–2 poll. lata, obtusa v. breviter et obtuse acuminata, margine leviter et obtuse serrata, serraturis minute glanduliferis, nitidula, supra læte-virentia, subtus pallida (Champ.), costa media subtus prominente, venis in rete venularum intra marginem confluentibus, petiolo 3–4-lineari. *Racemi* floridi 2–3-pollicares, terminales, basi cicatricibus squamarum notati, infra flores folia pauca caulinis multo minora gerentes. *Amenta* 8–10 mascula, 3–5 lin. longa, obtusa, summa sessilia, inferiora pedicellata; bracteis 3 (v. 4?) caducissimis, una majore subtendente 4–6 lin. longa membranacea extus puberula, 2 lateralibus (et quarta postica?) multo minoribus. *Stamina* numerosissima (100 ad 200), receptaculo oblongo-conico carnoso densissime inserta; filamenta brevissima; antheræ ¾ lin. longæ, oblongo-quadratæ, apice truncatæ, longitudinaliter 4-sulcæ et in valvulas

2 dorso oppositas dehiscentes. *Amentum* infimum subfœmineum, longius pedicellatum (pedicello per anthesin 3–4 lin. fructifero 1–1½ poll. longo), bracteis 4 caducissimis fultum, globosum, sub anthesi 3–4 lin. diametro, flores continens 20 ad 50. *Perianthia* (?) margine irregulariter crenulata et puberula, cum basibus ovariorum in massam duram concreta. *Stamina* pauca v. plurima, circa ovarium marginibus perianthii inserta, fertilibus similia sed minora et ut videtur effœta. *Ovarium* perianthio semi-immersum, biloculare, parte exserta divisa in lobos 2 conicos puberulos. *Styli* recurvi, intus papillosi. *Ovula* in loculis singulis circa 12, biseriata, partem superiorem dissepimenti occupantia. *Amentum* fructiferum 9–10 lin. diametro, perianthiis accretis rugosum, sublignosum, puberulum. *Capsulæ* haud exsertæ, apice hiantes, et in valvulas 2 bifidas breviter fissæ. *Semina* non vidi.

A tall tree, very common in the Wongnychung Valley woods. Readily distinguished from *L. Altingia* by its coriaceous leaves, narrowed at the base into a very short petiole[*].

3. Eustigma *oblongifolium*, Gardn. et Champ. Kew Journ. Bot. vol. i. p. 312.

Happy Valley woods, Mount Gough, Mount Victoria, and Black Mountain. Major Champion found abundance of this shrub in fruit in the Happy Valley woods; but almost invariably the seeds were destroyed by a worm before coming to maturity. The seeds are two in a capsule, obovate, and marked by an elevated annular raphe. In the only embryo seen, the cotyledons were small, with a conical radicle. The yellow flowers have a peculiar fragrance, in which the smell of chalk predominates.

CORNEÆ.

1. Benthamia *Japonica*, Sieb. et Zucc. Fl. Jap. vol. i. p. 38. t. 16, var. *sinensis*, foliis ovali-oblongis glabris v. vix minutissime puberulis.

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[*] In a memorandum on *Rhodoleia* in the 'Botanical Magazine,' misled by imperfect specimens and vague descriptions, I suggested that *Liquidambar Altingia* and *Sedgwickia* might yet be generically distinct. It appears, however, from specimens in Sir W. J. Hooker's herbarium, that *L. Altingia* and *Sedgwickia cerasifolia* are identical as species, and that all are certainly congeners of the American *Liquidambar*. All have monœcious flowers in terminal racemes. The upper amenta male, several in number, and falling off early, the lowest one borne on a longer stalk, persistent and female, or more or less hermaphrodite. Each amentum is subtended by three or four very deciduous bracts, scarcely numerous or persistent enough to constitute what is usually termed an *involucrum*.

Extremely rare in the Happy Valley woods, growing in very thick underwood. It forms a tree, thickly covered with flowers, the white bracts of which are very conspicuous at a distance. The flowers are green, with purple stamina. The calyx is entire and truncate, as in the Japanese specimens, and the leaves are still smoother and shining above; but in form they approach nearer to those of *B. fragifera*, from which this species is readily distinguished by the calyx, as well as by the absence of all whiteness on the leaves and young shoots.

2. Marlea *begoniæfolia*, Roxb.—DC. Prodr. vol. iv. p. 267.

Happy Valley woods, flowering in May and June. Arboreous. In young plants the leaf is extremely variable in shape. The flowers are at first white and rather fragrant, ultimately turning yellow, as in the Honeysuckle. For the close affinity of *Alangieæ* with *Cornus*, see Clarke in Kew Journ. Bot. vol. ii. p. 129.

CAPRIFOLIACEÆ.

1. Viburnum *nervosum*, Hook. et Arn. Bot. Beech. p. 190.

Common on Mount Victoria and Mount Gough, flowering in May. The ovule, according to Major Champion's observations on fresh specimens, is slightly excentrical, and only becomes central as the fruit is forming. The fruit has also a tendency to increase more on one side, which becomes convex, than on the other, which remains flatter; and although the seed is centrical, the umbilicus is often slightly lateral.

2. Viburnum *odoratissimum*, Ker.?—DC.?—Hook. et Arn. Bot. Beech. p. 190.

Arboreous. Common on the mainland of China, but found also in Hong-Kong.

3. Lonicera *longiflora*, DC. Prodr. vol. iv. p. 333.

Largely distributed over the island, but of less frequent occurrence than *L. hirtiflora*, flowering in March and April.

4. Lonicera *hirtiflora*, Champ., sp. n.; ramis volubilibus apice hispidis, foliis oblongis v. ovato-lanceolatis acutis basi subcordatis supra nitidis præter costam hispidam glabris subtus hirtellis villosisve, pedunculis ramisve thyrsiferis, florum sessilium paribus brevissime pedicellatis summis subcapitatis, corollæ limbo tubo elongato hispido multo breviore.—*Folia* breviter petiolata, 2–3-pollicaria. *Pedunculi* v. rami floriferi axillares, pilis longis patentibus hispidi. *Florum* paria opposita, in parte inferiore thyrsi pedicellata, bracteis sub-

tendentibus sæpe foliosis, paria superiora subsessilia in capitulum contracta, bracteis parvis. *Bracteæ* sub floribus ovaria non excedentes; bracteolæ orbiculatæ, ciliatæ, ovario dimidio breviores. *Calycis* dentes lanceolati, hispidi, tubo glabro breviores. *Corollæ* tubus tenuis, 15–16 lin. longus, pilis patentibus hirtus, pube brevi intermixta; limbus 6–8 lin. longus, ut in affinibus bilabiatus, labiis revolutis, altero integro æstivatione intimo, altero apice breviter 4-dentato, lobis æstivatione contorto-imbricatis. *Stylus* basi bulboso-incrassatus. *Ovarium* triloculare, ovulis in loculis 3–4 ab apice anguli interni pendulis. *Bacca* alba, ovoidea, glabra, 4–5 lin. longa, trilocularis, seminibus in loculis 2–4.

This is the most common Honeysuckle in Hong-Kong, and, as well as the Azaleas, adorns its hills and ravines in March.

5. Lonicera *reticulata*, Champ., sp. n.; ramis volubilibus tomentoso-velutinis, foliis ovatis obtusis crassiusculis supra glabris reticulato-rugosissimis subtus dense incano- v. flavescenti-tomentosis, pedunculis corymbiferis, florum sessilium paribus longiuscule pedicellatis, corollæ limbo tubo tomentoso parum breviore.—*Folia* plerumque bipollicaria, apice basique rotundata, margine recurva, rugositate paginæ superioris et indumento inferioris insignia, costa media venisque obliquis paucis subtus prominentibus, petiolo 4–6-lineari tomentoso. *Pedunculi* in axillis superioribus folia subæquantes. *Florum* paria 6–8 in corymbum brevem disposita. *Pedicelli* oppositi, biflori, inferiores 3 lin. longi bracteis petiolatis foliaceis 4–6 lin. longis subtensi, cæteri breviores bracteis linearibus. *Bracteæ* sub floribus lineares, tomentosæ, calycem subæquantes; bracteolæ ovario dimidio breviores. *Calycis* limbus tomentosus, tubo glabro paulo longior. *Corollæ* tubus tenuis, 8–9 lin. longus. *Ovarium* triloculare, loculis 2–3-ovulatis.

On the summit of hills, in grass or amongst rocks, flowering rather later than the two last. The rugose leaves, downy underneath, are something like those of the Indian Peninsular *L. Leschenaultii*; but their shape is different, as well as the inflorescence and flowers.

6. Lonicera *multiflora*, Champ., sp. n.; ramis volubilibus pubescentibus, foliis ovatis obtusis mucronulatis supra sparse puberulis subtus molliter pubescentibus, pedunculis ramisve thyrsiferis, florum sessilium paribus subsessilibus summis capitatis, corollæ limbo tubum tenuem pubescentem subæquante.—*Folia* quam in *L. Japonica* obtusiora, pube

molli, in pagina inferiore pallescente. *Bracteæ* sub pedicellis foliaceæ, petiolatæ, 2–4 lin. longæ, sub floribus ovario breviores, bracteolas paulo excedentes. *Calycis* laciniæ angustæ, villosulæ, tubo suo pariter villoso æquilongæ. *Corollæ* tubus 8–9 lin. longus.

From Mr. Cay's garden at Victoria, and according to him indigenous to the island. This species comes the nearest to the true *L. Japonica*, to which Zuccarini has with reason reunited the *L. confusa* and *L. Chinensis* of De Candolle, or *L. flexuosa* of our gardens. In that plant, however, the peduncles in cultivated as well as wild specimens are constantly short and simple, bearing only one pair of flowers; whilst in *L. multiflora*, besides differences in the shape of the leaves and in pubescence, the axillary peduncles are from ½–1 inch long, bearing at their summit a head or short thyrsus of from six to eight, or even more, pairs of flowers.

RUBIACEÆ.

1. Adina *globiflora*, Salisb.—DC. Prodr. vol. iv. p. 349.

Ravines towards West Point; at the waterfall in the Happy Valley, and other localities; an erect shrub.

2. Thysanospermum *diffusum*, Champ., gen. nov. e tribu *Cinchonearum*.

Gen. Char. THYSANOSPERMUM. *Calycis* limbus 5-lobus, persistens. *Corolla* hypocraterimorpha, laciniis 5 æstivatione imbricatis. *Stamina* ad faucem inserta, filamentis brevibus, antheris linearibus. *Stigma* exsertum, oblongo-clavatum, integrum. *Ovarium* biloculare. *Placentæ* in loculis solitariæ, ovatæ, peltatim dissepimento affixæ. *Ovula* plurima, peltata, sursum imbricata. *Capsula* subglobosa, bisulca, lævis, calycis dentibus coronata, loculicide bivalvis, valvulis septicide bifidis, placentis integris. *Semina* ala lata fimbriato-lacera cincta.—Species unica *T. diffusum*. *Fruticulus* ramosissimus, super saxa diffusus, ramulis tenuibus, novellis strigoso-pilosis. *Stipulæ* utrinque integræ, lanceolato-subulatæ, 1–2 lin. longæ. *Folia* breviter petiolata, 1–1½-pollicaria, ovato-lanceolata v. ovata, acute acuminata, subcoriacea, nitidula, supra glabra, subtus ad costam margineque ciliata. *Pedunculi* axillares, solitarii, uniflori, 2–3 lin. longi, hirsuti, supra medium bracteolis 2 minutis caducis instructi. *Calyx* vix lineam longus, lobis ovatis virentibus tubo globoso subbrevioribus. *Corollæ* albidæ tubus 5 lin. longus, rectus, æqualis, extus pubescens, intus basi glaber, apice breviter puberulus; laciniæ ovatæ, fere 2 lin.

longæ, obtusiusculæ, intus pubescentes. *Antheræ* vix corollæ lacinias æquantes, basi breviter sagittatæ; filamenta iis multo breviora, pilosa. *Stylus* glaberrimus, disco epigyno crassiusculo umbilicato insertus. *Capsula* fere *Hedyotidis*, axi vix bilineari, subdidyma, glabra, lævis, valvulis crustaceis. *Semina* in quaque placenta circa 10, ipsa minuta, ala cincta undique ½–1 lin. lata profunde et inæqualiter lacero-fimbriata. Embryo parvus, radicula brevi.

A trailing shrub upon rocks in ravines, abundant on Mount Victoria and some other places in Hong-Kong, flowering in June, fruiting in December. The globose capsule and fringed seeds had at first induced me to refer it generically to *Coptosapelta* of Korthals, a Borneo plant, described as having a similar trailing habit and leaves of the same shape. As however the flowers of the latter genus are unknown, the fructification is terminal, racemose, and bracteate, and the capsule woody, it is probable that the flowers will show still more marked generic differences. Besides, I do not understand the dehiscence of the capsule described as "in mericarpia duo loculicida," unless it be that each valve of the capsule carries with it the half of each placenta, which is not the case in our plant. Among older genera, *Thysanospermum* comes nearest to the American genus *Manettia*, in which the wing of the seeds is also sometimes toothed, but the habit, the corolla, and capsule show abundant points of generic distinction.

3. Ophiorrhiza *pumila*, Champ., sp. n.; caule herbaceo basi radicante adscendente pubescente, foliis ovatis ellipticisve minute scabro-puberulis, cymis breviter pedunculatis bifidis paucifloris, corollæ (vix 3 lin. longæ) tubo subæquali laciniis ovatis obtusis.—Habitus *O. rugosæ*, Wall., sed minor. *Caulis* nunc 1–2-pollicaris, nunc semipedalis. *Folia* petiolata, minora semipollicaria late ovata et obtusa, majora 1½-pollicaria acuta v. acuminata et basi in petiolum longe angustata, omnia supra viridia, subtus pallida, utrinque pilis minutis conspersa. *Pubes* venarum paginæ inferioris uti petioli et caulis brevissima, densa. *Stipulæ* parvæ, subulatæ, caducæ. *Pedunculus* brevissimus v. rarius fere 2 lin. longus. *Bracteæ* minutæ. *Pedicelli* calyce breviores. *Calycis* tubus ½ lin. longus, subglobosus, breviter et dense tomentosus, laciniis obtusis tubo subbrevioribus. *Corollæ* tubus fere 2 lin. longus, tenuissime tomentellus, supra basin leviter ampliatus et tenuiter costatus, apice paululum contractus, intus infra faucem annulo pilorum erectorum instructus, cæterum glaber, limbi laci-

niæ vix lineam longæ, glabræ. *Stamina* medio tubo inserta, antheris linearibus vix e tubo prominulis. *Discus* epigynus crassus, bilobus. *Stylus* apice leviter pilosulus, lamellis stigmatosis ovatis. *Capsula* generis, 3 lin. lata.

Among the numerous species of *Ophiorrhiza*, this comes nearest to *O. rugosa*, Wall., which it much resembles at first sight, but the plant is smaller and more slender, the peduncle shorter, and especially the corolla smaller and differently shaped. From ravines of Mount Victoria, but not very common.

4. Ophiorrhiza *Eyrii*, Champ., sp. n.; caule herbaceo glabriusculo, foliis [illegible] ovatis obtusiusculis v. obtuse acuminatis subglabris, pedunculo folia subæquante, cyma puberula trifida laxe pauciflora, calycis dentibus tubo tomentello duplo brevioribus, corollæ (7 lin. longæ) extus glabræ tubo infundibulari, laciniis acutis supra puberulis.—*Caulis* in specimine semipedalis, adscendens. *Stipulæ* desunt. *Folia* 1–2-pollicaria, basi rotundata, supra scabriuscula, subtus rubentia. *Pedunculus* ultrapollicaris, cyma 7-flora. *Bracteæ* parvæ, subulatæ. *Pedicelli* calyce breviores. *Calycis* tubus late turbinato-globosus, $\frac{3}{4}$ lin. longus, obtuse 10-costatus, dentibus triangularibus parvis patentibus. *Corollæ* tubus tenuiter costatus, 6 lin. longus, a medio ad faucem dilatatus, intus fere a basi usque ad medium pilosus, superne glaber, laciniis recurvo-patentibus, linea paulo longioribus, supra minute puberulis. *Discus* epigynus bilobus, dentes calycinos fere duplo superans. *Stylus* medio hispidus, lamellis stigmatosis oblongis.

Found by Colonel Eyre in sheltered ravines, near water. The species does not come very near to any that I am acquainted with; the whole plant assumes a remarkable red hue when dry.

5. Hedyotis (Macrandria) *recurva*, Benth. in Lond. Journ. Bot. vol. i. p. 486.—*Tota planta* glabra, etsi tactu scabriuscula. *Ramuli* teretes v. leviter tetragoni. *Stipulæ* breviter vaginantes, setis usque ad 3–4 lin. longis. *Folia* 2–2½-pollicaria, acuminata, basi rotundata v. cuneata, venis obliquis supra impressis. *Umbellæ* multifloræ, in axillis superioribus pedunculatæ, ad apicem caulis paniculam oblongam constituentes. *Pedunculi* semipollicares v. paulo longiores. *Flores* in umbella 10–20, breviter pedicellati. *Calycis* tubus turbinatus, lineam longus; limbus basi membranaceus, lobis herbaceis linearibus recurvis tubo paulo longioribus, sinubus obtusis minute 2–3-setis. *Corollæ* tubus calycis laciniis brevior, laciniæ fere 2 lin. longæ,

apice recurvæ, intus basi uti faux corollæ pilosæ. *Stamina* nunc corolla breviora stylo longe exserto, nunc corollam subsuperantia stylo incluso. *Discus* epigynus concavus, circa stylum hispidus. *Placentæ* medio dissepimento peltatim affixæ. *Capsula* intra dentes calycinos breviter 4-valvis, in coccos 2 facile bipartibilis.

Abundant in ravines, gathered also by Fortune, n. 53.

6. Hedyotis (Diplophragma) *acutangula*, Champ., sp. n.; suffruticosa? glabra, caule erecto acute tetragono v. alato, stipulis triangularibus, foliis ovato-lanceolatis subsessilibus crassiusculis pauciveniis, cymis 2–3-chotomis paniculatis, calycibus sessilibus, dentibus brevibus obtusis, corollæ tubo exserto lobis longiore, capsulæ coccis intus hiantibus.—*H. Lawsoniæ?* Benth. in Lond. Journ. Bot. vol. i. p. 496, non Wight et Arn.—*Caules* ultrapedales, basi crassi, sublignosi. *Stipulæ* herbaceæ, breviter vaginantes, obtusæ v. acutæ, integræ v. apice denticulatæ. *Folia* 2–3-pollicaria, basi rotundata v. longe angustata, venis valde obliquis sæpe inconspicuis. *Cymæ* corymbiformes, multifloræ, in paniculam oblongam v. subcorymbosam dispositæ, ramis angulatis alatisve, bracteis parvis patentibus. *Calycis* tubus turbinatus, semilineam longus; laciniæ ovatæ, tubo breviores. *Corollæ* tubus lineam longus, intus supra medium villosus, limbi laciniæ ovato-lanceolatæ. *Stamina* inclusa. *Stylus* vix exsertus. *Discus* epigynus tenuis, glaber. *Placentæ* supra medium dissepimenti peltatim affixæ. *Capsulæ* vix linea longiores. *Semina* pauca, orbiculata, intus angulata, peltatim affixa.

Common in ravines, flowering in summer. It is Fortune's no. 75. From the older descriptions I had formerly thought this might be the *H. Lawsoniæ*, taken up from Rheede and Lamarck, but it is certainly widely different from that species as now figured in Wight's 'Icones.'

7. Hedyotis (Euhedyotis) *borrerioides*, Champ., sp. n.; glabra, caule adscendente acutangula, stipulis triangularibus laciniatis, foliis subsessilibus oblongo-lanceolatis basi angustatis, capitulis multifloris sessilibus, calycis laciniis oblongo-linearibus obtusis corollam æquantibus.—*Caules* virgati, ultrapedales. *Stipulæ* brevissime vaginantes, laciniis lineari-subulatis rigidulis. *Folia* bipollicaria, lævia, venis paucis valde obliquis subtus prominentibus lineata. *Florum* cymæ densissimæ, more *Borreriarum* in capitula duo globosa collectæ, altero terminali 6–8 lin. diametro, foliis 2 fulto, altero a terminali distante, axillari, verticilliformi. *Calycis* tubus subglobosus, vix lineam longus;

laciniæ longiores, apice fere spathulatæ et convexiusculæ, sinubus acutis, dente accessorio lineari rarius interjecto. *Corollæ* purpurascentis laciniæ calycem æquantes, tubo suo paulo longiores. *Capsulæ* dicoccæ, coccis tandem intus rima dehiscentibus.

Common in the neighbourhood of Chuckchow, but not on the Victoria side of Hong-Kong. In flower in August.

Korthals is perfectly correct in reducing to this, which must be regarded as the typical section of *Hedyotis*, the greater number of Blume's species of *Metabolos*, but I cannot agree with him in considering as distinct genera the sections *Dimetia*, *Macrandria*, and *Diplophragma* of Wight and Arnott, in all of which the fruit readily splits into two cocci. On the other hand, adopting the sectional groupes so well characterized by Wight and Arnott, these writers appear to me to have gone too far in uniting them all into one genus. *Oldenlandia*, *Anotis*, and *Houstonia*, with their purely loculicidal dehiscence, appear to me to constitute a natural genus, which is the *Hedyotis* of Torrey and Gray's Flora; and *Scleromitrion* with its peculiar Spermacoccous habit and characters, as defined by Wight and Arnott, may be allowed to remain as a genus distinct from either, answering to *Hedyotis* as defined by De Candolle. *Kohautia* likewise is too well marked in habit and character to be merged into *Hedyotis*.

8. Scleromitrion *angustifolium*. — *Hedyotis angustifolia*, Cham. et Schlecht.—DC. Prodr. vol. iv. p. 419.

Ravines, Hong-Kong. I have it also from Java, and it may possibly not be distinct from *S. tenelliflorum*, Korth., or *Hed. tenelliflora*, Blume.

9. Oldenlandia *corymbosa*, Linn.

With the preceding species.

(*To be continued.*)

Notes on BELOOCHISTAN PLANTS; *by* J. E. STOCKS, M.D., F.L.S., *Assistant Surgeon, Conservator of Forests and Superintendent of Botanic Gardens, Bombay Establishment.*

(*Continued from p.* 150.)

CONVOLVULACEÆ.

17. Convolvulus *tenellus*, J. E. S.; annuus, caule erecto cum foliis lineari-lanceolatis utrinque acuminatis pilis ut plurimum adpressis

vestito, partibus novellis sericeis, floribus ad apicem ramulorum solitariis vel binis, sepalis glabris ovali-acutis margine pellucidis sæpe irregulariter dentatis, ovario glabro globoso.

HAB. Shah Bilawul, in Lower Beloochistan. No. 598.

18. Convolvulus *Scindicus*, J. E. S.; caule suffruticoso patule et perplexe ramoso, ramis rigidis velutino-rufescentibus, ramulis abruptis cum foliis dense velutino-tomentosis cinereis, foliis parvis spathulatis margine integris plicatis nervis subtus prominulis, floribus ad apicem ramulorum congesto-capitatis, ramulis floriferis 1–8 pollices longis capitulis hirsutissimis, bracteis ovalibus sericeo-hirsutis, sepalis lineari-lanceolatis extus dense sericeo-hirsutis intus glabris, capsula glabra.

HAB. Lower hills of Scinde and Beloochistan. No. 433.—Very near *Conv. Forskalii.*

A scraggy plant, which may be recognized at a distance by its grey ashy hue, with stiff, close-set, entangled branches, spreading from the root, and forming a compact round-headed bushlet, seldom more than a foot high. *Leaves* small, on the flower-branches almost sessile, 3 lines by 2, and on the young leafy shoots 6 lines by 4, with a petiole 2 lines long.

19. Cuscuta *Boissieri*, J. E. S.; caule filiformi aurantiaco, floribus racemoso-corymbosis, flore singulo pedicellato bracteato, pedicello infra calycem incrassato, calyce lineam longo 4–5-partito laciniis acutis, corolla calycem dimidio superante 4–5-fida laciniis acutissimis reflexis, squamis nullis, staminibus exsertis, filamentis ad sinus corollæ insertis, stylis distantibus, stigmatibus capitatis, capsulæ globosæ calyce persistente et corolla marcescente cinctæ stylisque divergentibus coronatæ, loculis irregulariter ruptilibus. Cuscuta Arabica, *Wight's Icon. t.* 1371. *non Fres.*

HAB. Lower Beloochistan and Scinde Hills, spreading over *Trianthema pentandrum*, *Tribulus*, *Amaranthus, etc.* No. 478.

BORAGINACEÆ.

20. Heliotropium (Catimas) *Brahuicum*, J. E. S.; radice perenni, caulibus erectis rigidis cum foliis pilis plerumque adpressis crebre subincanis, foliis raris petiolatis inferioribus ovatis superioribus lanceolatis sæpe inæquilateris obliquis margine leviter revoluto subundulato, spicis paucifloris, calyce extus piloso corollæ tubum vix æquante, corolla extus pilosa, antheris ad medium corollæ insertis,

stylo elongato inconspicue retrorsum piloso stigma conicum apice bilobum parce pilosum longitudine æquante, nuculis glabris.

HAB. Upper Beloochistan, above 4000 feet. A very rigid species, with scattered leaves and distant flowers. No. 865.

21. Heliotropium (Euheliotropium) *calcareum*, J. E. S.; erectum, pube brevi densa strigoso-incanum, foliis ovatis acuminatis subtus prominule reticulatis, spicis solitariis vel conjugatis ebracteatis junioribus scorpoideis senioribus elongatis (6–8 pollices), calycis laciniis lanceolatis strigosis, corollæ tubo piloso sepala æquante limbi lobis æstivatione quincunciali, antheris ad medium corollæ insertis apice acuminato inflexo, stylo brevissimo retrorsum piloso, stigmate a basi incrassata subulato-conico sursum piloso apice subbilobo, calycibus fructiferis distantibus clausis nuculas strigoso-pilosas includentibus.

HAB. Hills of Scinde and Lower Beloochistan. No. 630.

22. Heliotropium (Orthostachys) *rariflorum*, J. E. S.; radice perenni, caulibus erectis rigidis cum foliis pilis adpressis canescentibus, foliis linearibus margine incrassato subrevoluto, spicis bracteatis, floribus parvis extra-axillaribus sessilibus, calyce corollæ tubum æquante, corollæ tubularis extus pilosæ limbi segmentis erectis approximatis cochleari-fornicatis fauce pilosa, antheris supra medium corollæ insertis, stylo elongato glabro, stigmate parvo piloso, nuculis hispido-pilosis calyce patente longioribus.

HAB. Hills of Scinde and Lower Beloochistan. No. 492.

A stiff under-shrub, with adpressed hairs, linear leaves, and short spikes. Stigma inconspicuous.

23. Arnebia *fimbriopetala*, J. E. S.; annua, pusilla, caule nisi ad apicem glabro, foliorum margine pilis basi bulbosis ciliato paginis adpresse setosis, racemis densis secundifloris, bractea sepalisque conformibus floriferis lanceolato-subulatis (semiuncialibus) fructiferis foliaceis (sesquiuncialibus), corollæ flavæ hypocrateriformis tubo gracili (unciali) limbo amplo (8–10 lineas diametro) ad marginem inciso-fimbriato sinubus intruso-plicatis erectis, nuculis verrucosis.—Arn. fimbriopetala, *J. E. Stocks in Kew Gard. Misc. v.* 3. *p.* 180. *t.* vi.

HAB. Upper Beloochistan, on rocky ground at Doobund, Chehel Tun, etc. No. 977.

Remarkable for the size and beauty of its fimbriate corolla, and its sepals much enlarged in fruit. Figured in 'Hooker's Journal,' June, 1851, p. 180. t. 6. I may remark that the style and stigma do not differ from the other species, the style being twice bifid. The drawing is hence to be corrected in this point.

24. Echinospermum *calathicarpum*, J. E. S.; caulibus pube adpressa incanis, foliis radicalibus spathulatis caulinis lanceolatis margine subundulatis sæpe inæquilateraliter obliquis paginarum setis adpressis, racemis elongatis, floribus ebracteatis breviter pedunculatis, calyce pedunculum floriferum æquante fructiferum superante, nuculis distantibus rachidi adpressis tribus anterioribus conformibus scil. cinctis membrana bullato-calathiformi ruguloso-tuberculata demum scariosa ad marginem aculeorum brevium simplici serie armata apertura centrali parva disco intus parce aculeolato, nucula axili parva nuda plana ad discum et marginem breviter glochidiato-aculeolato.

HAB. Upper Beloochistan. No. 1003.

Seems to approach *Echinospermum Diploloma* of Schrenck, but has more numerous aculei on the margin of the inflated membrane.

25. Paracaryum (Mattiastrum) *asperum*, J. E. S.; pilis rigidis patulis e tuberculo ortis hispido-asperum, caulibus erectis foliosis, foliis lanceolatis acutis margine erosis undulato-crispis radicalibus in petiolum longum e basi amplexicauli attenuatis caulinis linearibus sessilibus, paniculæ demum elongatæ floribus distantibus pedicellis erectis calycem floriferum æquantibus fructiferum superantibus nuculas maturas haud æquantibus, calycis corollæ dimidium haud attingentis laciniis angustis lanceolatis, corollæ elongatæ tubo in faucem amplissimam infundibuliformem plicatam transeunte limbi laciniis rotundatis sinubus intrusis fornicibus bilobis ad corollæ medium insertis, stylo et antheris insertis, nuculis planis vel leviter concavis orbiculari-ovatis disco aculeatis ala lata grosse dentata cinctis aculeis dentibusque glochidiatis.

HAB. Upper Beloochistan. No. 906.

A fine species, with large flowers of a violet hue. *Plant* 1–2 feet high. *Radical leaves* (including the petiole) 3–6 inches long and 5–6 lines wide. *Calyx* 1½–2 lines high. *Corolla* 4–5 lines long.

26. Paracaryum (Euparacaryum) *rubriflorum*, J. E. S.; pilis patulis e tuberculo ortis hispidum, foliis lineari-lanceolatis acutis radicalibus longe petiolatis caulinis subsessilibus, pedunculis floriferis calycem æquantibus fructiferis calycem et nuculas plus minus superantibus, calycis corollæ tubum paulo superantis laciniis late lanceolatis, corollæ fornicibus integris, stylo et antheris insertis, nucularum

disco ad lineam mediam aculeis 4–5 simplicibus vel glochidiatis instructo membrana bullato-calathiformi ad marginem inflexum minute dentata intra marginem lævi vel rarius tuberculata.

Hab. Upper Beloochistan. No. 933.

Calyx 1½–2 lines long. *Corolla* 2½ lines long. *Nuts* 4 lines across. *Flowers* purple-red.—Comes very near *P. rugulosum*, Boiss., and seems to differ in its more harsh and spreading pubescence, its larger nuts and flowers, and the aculei on the face of the nuts.

27. Rochelia *rectipes*, J. E. S.; annua, scabro-hispida, foliis e basi semiamplexicauli lineari-acuminatis, racemis elongatis, floribus extra-axillaribus, pedunculo florifero sepala bracteasque æquante fructifero elongato recto sepala valde aucta erecto-patentia lanceolata in unguem attenuata nervo medio percursa plus minus superante, nuculis rectis glochidiato-saccharatis.

Hab. Gurghina, in Upper Beloochistan. No. 978.

Readily known by its straight peduncles and sepals. *Sepals* broad. *Corolla* pale blue, with a white throat.

LABIATÆ.

28. Perowskia *abrotanoides*, Kar.; et *atriplicifolia*, Benth.

Both these species grow common in Beloochistan, and the flowers and tops are collected and sold in the bazaars, under the name of the plant, *Tirk*, or *Gwáree Durnoo.* They are supposed to be cooling and useful in fever and ague. It may be noted that Karelin, in his description of the genus, has reversed the position of the lips of the corolla, though strangely enough he has kept the perfect or larger stamens in their right position, viz., anteriorly. This may be ascertained by a reference to the relation between the odd or posterior segment of the calyx and the lips of the corolla, and by the line of origin of the perfect stamens, which it will be seen is between the anterior and posterior lips. The anterior lip is long, narrow, and undivided, and the fissure between it and the posterior lip is very deep. The posterior lip is made up of the four posterior segments of the corolla, the axile sinus being the shallowest. The stamens become finally declinate. The posterior stamens are also present, but so very small and imperfect as to deserve the name of staminodia only. They are to be seen on the upper lip. We may alter the generic character thus:—“Corollæ . . . limbo bilabiato labio superiore 4-lobo labio inferiore elongato integro.

Stamina postica brevissima castrata, antica fertilia demum declinata," etc. The genus seems allied to *Hoslundia* among the *Ocimoideæ*, next to which it should probably stand, and not among the *Monardeæ*.

ACANTHACEÆ.

29. Lepidagathis *strobilifera*, J. E. S.; suffruticosa, depressa, ramis ligneis, ramulis quadrangulis, pilis brevibus ad cacumina adpressis infra patulis, foliis petiolatis lanceolatis vel ovato-lanceolatis basi sæpe inæquilateris apice obliquis junioribus sub lente pube adpressa vestitis senioribus denudatis, spicis confertis strobiliformibus, bracteis trinerviis sæpe vacuis apiculo rigido patenti-reflexo cum calycis laciniis majoribus læte-viridibus demum scariosis obovato-acutis margine ciliatis ad nervos strigoso-pubescentibus, bracteolis subulatis ciliatis, sepalo anteriore prope ad basin bifido binervi, sepalo posteriore trinervi, sepalis lateralibus multo minoribus subulatis ciliatis, corolla bracteas et calycem vix dimidio supereminente, staminum anteriorum loculis obliquis (uno altius posito), staminum posteriorum loculo uno castrato vel penitus abortivo.

HAB. Shah Bilawul, in Lower Beloochistan. No. 613.

Leaves 7–10 lines by 3–5, and petiole 3–4. *Spikes* $\frac{1}{2}$–$\frac{3}{4}$ of an inch in height. *Corolla* 7–8 lines, dingy white, with the middle of the lower lip marked by purple spots. *Anterior bracts* and larger sepals 4 lines by 3. *Bracteoles* 2 lines, and smaller *sepals* 2$\frac{1}{2}$–3 lines long.

30. Dipteracanthus *longifolius*, J. E. S.; basi suffruticosus, viscoso-puberulus, caulibus erectis subteretibus, partibus novellis apice sericeo-lanatis, foliis elongatis linearibus utrinque acuminatis internodia superantibus pilis tenuissimis dense et molliter pubescentibus, floribus axillaribus solitariis vel binis, bracteis foliaceis florem æquantibus, calycis segmentis subulatis ciliatis corollæ dimidium æquantibus, corollæ tubo brevi in faucem amplissimam infundibuliformem plicatam transeunte limbi lobis brevibus obtusis, ovarii loculis 6-ovulatis, capsulæ pubescentis calycem duplo supereminentis basi brevi asperma.

HAB. Shah Bilawul, in Lower Beloochistan. No. 537.

Leaves 2–3 inches long by 2–3 lines wide. *Corolla* 9–10 lines long, dusky lilac, the throat marked externally by longitudinal furrows caused by plaits which project into the throat.

SOLANACEÆ.

31. Hyoscyamus *insanus*, J. E. S.; pilis patentibus apice furcato-stellatis viscoso-tomentosus, foliis subrhomboideis crassis succidis grosse sinuato-dentatis inferioribus amplis, petiolo bi-tri-pollicari, spicis plurifloris, bracteis inferioribus foliaceis superioribus integris, pedunculis variæ longitudinis, calyce obconico demum campanulato prominente reticulato dentibus triangularibus vel obtusiusculis, corollæ calyce duplo longioris limbi segmentis obtusis duobus minoribus, stylo et staminibus infra pilosis exsertis inclinatis, ovario piloso.

HAB. Growing from chinks of rocks or in soft soil in rocky ground throughout Beloochistan. No. 623.

This is known by the name of Kohee Bhung, or Mountain Hemp. It is said to be smoked in small quantities by debauched Fakeers, and to be used by evil-disposed persons to injure those with whom they are at enmity. It is described as causing dryness and constriction of the throat, and furious delirium, and as it is known to every native, it probably may be sometimes used, though I never could hear of one who had smoked it either by design or accident. It seems to approach very nearly to *Hyosc. muticus* and *Daturæ*, nor can I suggest certain distinctive marks; I add a fuller description for those who may have the opportunity of seeing living plants of these two species.

Root in loose ground creeping extensively, and emitting stems which are procumbent at the base and cover a large extent of surface. *Branches* and branchlets clothed with soft, clammy, woolly hairs, which are branched or stellate at the tip. *Leaves* very thick and brittle, rhomboid in outline, with coarse teeth and wide intermediate sinuses, the lower ones sometimes 9 inches by 6, with a petiole 3 inches long. *Spikes* 10–30-flowered, when young scorpoidal, when old much elongated (6–12 inches), with flowers turned to one side, the lower flowers having a stalk as long as the calyx, the upper stalk not exceeding a line. Lower floral bracts leaf-like, upper ones linear and half as long as the calyx. *Calyx* with sharp triangular teeth, or obscurely bluntly and irregularly lobed. *Corolla* as long again as the calyx, with a greenish-white tube, gradually enlarging into a capacious throat; limb generally oblique, with a fissure between the two smaller segments, pale pink with purple veins and dark purple spots, looking like the corolla of some *Pelargonium*. *Stamens* free from the upper half of the corolla, with hairs on the lower (or attached) part and some way up the free part. *Ovary* hairy. *Style* hairy below, and with the stamens projecting from out of the mouth of the corolla and turned down towards the cleft. *Stigma* minute.

32. Lycium *foliosum*, J. E. S.; suffruticosum, depressum, ramis rigidis intricatis ramulisque spinescentibus, foliis parvis fasciculatis crassis subcarnosis anguste linearibus sæpe cylindricis basi attenuatis apice clavatis, floribus fasciculatis, pedicello calycem æquante, calycis glabri margine irregulari subbilabiato, corollæ tubo glabro calycem duplo supereminente limbo lilacino, staminibus e media corolla liberis plus minus exsertis, filamentis ad apicem pilosis, ovario glabro, stylo longe exserto, stigmate viridi obscure bilamellato.

HAB. Rocky ground near Kelat. No. 1117.

A low, intricately branched shrublet, growing in stiff tufts. *Segments* of the corolla and stamens varying from four to five. *Leaves* 4–5 lines long by ½ a line thick, fleshy, often cylindrical.

33. Lycium *depressum*, J. E. S.; frutex vel arbuscula, ramis validis patentibus (nec dependentibus), ramulis parce spinosis, partibus novellis parce glanduloso-pubescentibus adultis glabris, foliis petiolatis lanceolatis sæpe obliquis subfalcato-inæquilateris, floribus fasciculatis longe pedunculatis, pedunculo calycem ter quaterve excedente, calyce glabro 4–6-dentato fructifero fisso, corollæ tubo glabro calycem duplo supereminente limbi laciniis 4–6 amplis lilacinis, staminibus supra medium corollæ liberis omnino glabris cum stylo exsertis, stigmate distincte bilamellato.

HAB. Various stations in Upper Beloochistan, where it grows from three to ten feet in height, with strong self-supporting branches, and soft vigorous young shoots. No. 995.

PLANTAGINEÆ.

34. Plantago *remotiflora*, J. E. S.; tota sericeo-lanata, foliis anguste lanceolatis 3–5-nerviis integerrimis, spicis 10–30-floris demum elongatis (3–8 pollices, floribus ½–1 pollicem, distantibus), bracteis explanatis apice glabris acutis basi amplexicaulibus margine membranaceis calycem æquantibus, corollæ laciniis angustis acutis parce ciliatis.

HAB. Hills of Scinde and Lower Beloochistan up to 5000 feet, with *Plantago amplexicaulis* (Cav.), and *P. penicillata* (Endl.), which last seems to come very near *P. ciliata*, Desfont. t. 39. No. 594.

THYMELEÆ.

35. Daphne *acuminata*, Boiss. et Hohenack. *inedit.;* fruticosa, ramulis ad apicem pubescentibus, ramis foliisque glabris, foliis anguste lineari-lanceolatis basi et apice attenuatis pungenti-mucronatis sessilibus vel vix petiolatis, floribus 5–15 ad apicem ramulorum glomeratis breviter pedunculatis, calyce albo-tomentoso, ovario villoso, fructu pubescente.

HAB. Persia and Kurdistan, *Kotschy*, 189, 551. Upper Beloochistan from 4500 feet, where it is called Peepul, and known as very poisonous to camels. No. 859.

A shrub 4–8 feet high. *Leaves* 1½–2 inches by 2–3 lines. *Calyx* externally woolly, with the segments of the limb of a pure white. *Flowers* sweet-smelling. *Fruit* orange-red.—Comes near *D. papyracea*, Wall., but differs in its much narrower and mucronate leaves, and the silky ovary.

LILIACEÆ.

36. Fritillaria *pterocarpa*, J. E. S.; caule pubescente uni-pluri-floro, foliis duobus infimis approximatis pseudo-oppositis lanceolatis caulinis linearibus floralibus binis, pedunculis floriferis horizontalibus post anthesin apice deflexis fructiferis erectis, perigonii sepalis breviter calcarato-gibbosis sordide purpurascentibus venis saturatioribus calcaribus atro-fuscis, staminibus basi pilosis, stylo integro, ovario turbinato 6-sulcato 6-angulato vertice truncato cornubus sex coronato, capsula depressa 6-sulcata (sulcis alternis sæpissime profundioribus) 6-angulata angulis obtusis vel acutis vel alatis sursum in cornua productis.

HAB. Upper Beloochistan. No. 918.—Flowers inconspicuous, dull-coloured.

ASPHODELEÆ.

37. Uropetalum *unicolor*, J. E. S.; foliis linearibus canaliculatis glaucescentibus glabris scapum subæquantibus, racemo nutante 4–6-floro, bracteis striatis ovato-acuminatis pedunculum floriferum dimidio superantibus, pedunculis floriferis horizontalibus vel nutantibus fructiferis erectis, perigonii foliaceo-viridis cylindrico-campanulati sepalis linearibus obtusis exterioribus ad dimidium interioribus ad tertiam partem et leviter recurvatis stylo ovarium æquante, stigmate

inconspicuo obtuso trilobo, capsula polysperma depressa profunde trigastra vix stipitata vertice truncata basi nunc attenuata nunc truncata.

HAB. Hills of Scinde and Lower Beloochistan; after rain. It is called Junglee Bussur, or Wild Onion, and its bulbs are eaten. No. 634.

Leaves 6–8 inches. *Scape* 8–12 inches. *Peduncles* in flower 2 lines, in fruit 3–4 lines. *Bracts* 2½ lines long. *Fruit* 4 lines by 3.—It is very near *U. serotinum*, but differs in its flowers, which are the colour of the leaves, and in its few-flowered not many-flowered raceme.

A List of the PROTEACEÆ *collected in South-western Australia by* MR. JAMES DRUMMOND; *by* DR. and PROFESSOR C. F. MEISNER.

[Previous to this list being printed, it was submitted to our friend Mr. Kippist, Librarian of the Linnean Society, who returned it with the accompanying remarks, which cannot fail to be acceptable to the possessors of Mr. Drummond's Swan River plants. "I have carefully compared it with the list kept by myself of Mr. Saunders's set, and find the numbers in general very correctly given, with the exception of two distinct series having been confounded under Collection IV., an error which Dr. Meisner evidently suspected, but had not the means of correcting. Of those marked IV. in his list, the higher Nos. (between 500 and 700) all belong to the earliest of the *numbered* collections, the only one of which the numbers are quoted in the first volume of 'Plantæ Preissianæ.' The remaining Nos. (about 250–320) are all that really belong to the fourth set. As a further means of distinguishing these, in case you should think it desirable to do so, I have taken the liberty of prefixing the date (1848) to those which I found marked in my list as belonging to the fourth collection. The remaining IV.'s may therefore be altered to I., and the sequence of the different series will then be correct. Should you think it worth while, before printing the list, to make this alteration, it will be necessary to distinguish by the addition of an asterisk, or in some other way, the unnumbered series, Meisner's Collection I."—The date (1848) is here added, as suggested by Mr. Kippist.—ED.]

The Roman numbers are those of the collections or series as they have successively been received in Europe. The species and *var. ineditæ* are marked *MSS.*, and will be found characterized in the forthcoming volume of De Candolle's 'Prodromus.' For the rest see R. Brown, Prodr., and 'Plantæ Preissianæ.'

IV. 260.	Petrophila	crassifolia, *R. Br. suppl.*
I.	,,	brevifolia, *Lindl.!* (Gilbert, sine no.)
II. 293; III. 241.	,,	media, *R. Br. suppl.!*
(1848) IV. 259.	,,	teretifolia, *R. Br.!*
II. 241.	,,	longifolia, *R. Br.! suppl.*
I.; III. 240; IV. 556.	,,	juncifolia, *Lindl.!* (Gilbert, n. 62.)
III. 242.	,,	acicularis, *R. Br.!*
IV. 557.	,,	scabriuscula, *Meisn.*
IV. 261.; V. (1850) 394.	,,	anceps, *R. Br.! suppl.*
I.; IV. 558.	,,	linearis, *R. Br.! suppl.*
I.; IV. 561, 562, 572.	,,	seminuda, *Lindl.!*
I.; IV. 570.	,,	Drummondii, *Meisn.*
III. 248.	,,	crispata, *R. Br.! suppl.*
I.	,,	rigida, *R. Br.!*
I.	,,	Serruriæ, *R. Br.! suppl.* (Gilbert, n. 185.)
I.; IV. 569.	,,	glanduligera, *Lindl.!*
IV. 568.	,,	divaricata, *R. Br.! suppl.* (*P. intricata*, Lindl.)
	,,	colorata, *Meisn.* (Gilbert, n. 155.)
II. 297.	,,	diversifolia, *R. Br.!* (Gilbert, n. 139)
IV. 262.	,,	carduacea, *Meisn. MSS.*
I.; IV. 566.	,,	biloba, *R. Br.! suppl.*
I.; III. 244; IV. 571.	,,	heterophylla, *Lindl.*
IV. 567.	,,	propinqua, *R. Br.! suppl.*
IV. 576.	,,	trifida, *R. Br.!*
	,,	squamata, *R. Br.!* (*P. Cunninghamii, a,* Meisn.)
IV. 565.	,,	striata, *R. Br.! suppl.* (Gilbert, sine no.)
I.; IV. 575.	,,	macrostachya, *R. Br.! suppl.*
II. 298.	,,	Shuttleworthiana, *Meisn.*
IV. 263.	Isopogon	scabriusculus, *Meisn. MSS.*

I.	Isopogon	petrophiloides, *R. Br.! suppl.*
I.	,,	teretifolius, *R.Br.! β.cornigerus*, Ldl.! (Gilbert, n. 300.)
I.; IV. 560, 573.	,,	divergens, *R. Br.! suppl.* (Gilbert, n. 306.)
I.; IV. 574.	,,	asper, *R. Br.! suppl.* (*I. scaber*, Ldl.! non Meisn.)
I.; II. 295; III. 247.	,,	formosus, *R. Br.!* (Gilbert, n. 61.)
IV. 563, 564.	,,	roseus, *Lindl.! Bot. Reg.* 1842. Misc. n. 37. (*P. scaber*, Meisn. Bot. Mag. t. 4037. non Lindl.)
V. 399.	,,	villosus, *Meisn. MSS.*
III. 246.	,,	tripartitus, *R. Br.! suppl.*
III. 245.	,,	Baxteri, *R. Br.! suppl.*
V. 397.	,,	latifolius, *R. Br.! suppl.*
V. 398.	,,	Protea, *Meisn. MSS.*
II. 294.	,,	attenuatus, *R. Br.!*
I.; IV. 559.	,,	sphærocephalus, *Lindl.!* (Gilbert.)
III. 243.	,,	uncinatus, *R. Br.! suppl.*
a. III. 249; *β*. V. 395.	,,	spathulatus, *R. Br.!* var. *a* et *β*.
V. 396.	,,	buxifolius, *R. Br.*
IV. 265.	Adenanthos	linearis, *Meisn. MSS.*
I.; IV. 591.	,,	barbigera, *Lindl.!*
IV. 592.	,,	obovata, *Labill.!*
IV. 264.	,,	venosa, *Meisn. MSS.*
III. 245, 254.	,,	cuneata, *Labill.*
II. 301.	,,	Meisneri, *Lehm.*
III. 253.	,,	procumbens, *Meisn.*
III. 255.	,,	sericea, *Labill.*
IV. 266.	,,	velutina, *Meisn. MSS.*
IV. 593.	,,	Drummondii, *Meisn.*
I.	,,	apiculata, *R. Br. suppl.* (Gilbert, n. 7.)
III. 256.	,,	pungens, *Meisn.*, *β*. simplicifolia.
V. 400.	,,	armata, *Meisn. MSS.*
III. 258.	Synaphea	favosa, *R. Br.*
II. 303.	,,	dilatata, *R. Br.* (Gilbert, n. 179.)
III. 259.	,,	Drummondii, *Meisn. MSS.*

I.	Synaphea	decorticans, *Lindl.!*
I.; IV. 588.	„	gracillima, *Lindl.!*
II. 302.	„	petiolaris, *B. Br.!*
IV. 589.	„	acutiloba, *Meisn.* (Gilbert, n.178?)
III. 257.	„	Preissii, *Meisn.*
I.; IV. 590.	„	brachystachya, *Lindl.!* (Gilbert, n. 269.)
IV. 267.	Stirlingia	teretifolia, *Meisn.*
IV. 268.	„	intricata, *Meisn. MSS.*
I.; IV. 586.	„	simplex, *Lindl.!*
IV. 587.	„	abrotanoides, *Meisn.*
(1848) IV. 269.	„	anethifolia, *Endl.*
I.	Conospermum	glumaceum, *Lindl.!* (Gilbert, n.114.=*C.lupulinum*, Endl.)
III. 252.	„	bracteosum, *Meisn.*
I.; IV. 577.	„	triplinervium, *R. Br. suppl.*
(1848) IV. 270.	„	crassinervium, *Meisn. MSS.*
I.; β. V. 401.	„	undulatum, *Lindl.!* et var. β. *minus.*
II. 304.	„	Brownii, *Meisn.*
II. 306.	„	marginatum, *Meisn.*
IV. 584.	„	Kügelii, *R. Br.*
II. 305.	„	polycephalum, *Meisn.*
I.; IV. 582.	„	densiflorum, *Lindl.!*
I.	„	acerosum, *Lindl.!*
IV. 583.	„	amœnum, *Meisn.*
IV. 580.	„	distichum, *R. Br.*
IV. 578.	„	filifolium, *Meisn.*
II. 308; IV. 579.	„	incurvum, *Lindl.!* (Gilbert, n. 70.)
I.	„	brachyphyllum, *Lindl.!*
I.; IV. 581.	„	Stœchadis, *Endl.*
II. 307.	„	canaliculatum, *Meisn.*
II. 311.	„	teretifolium, *R. Br.*
III. 250.	„	petiolare, *R. Br. suppl.*
III. 251.	„	capitatum, *R. Br.*
II. 309, 310; V. 402.	„	flexuosum, *R. Br. suppl.*
(1848) IV. 271.	Franklandia	fucifolia, *R. Br.!*

(1848) IV. 275.	Persoonia	hakeæformis, *Meisn. MSS.*
I.; IV. 598.	,,	macrostachya, *Lindl. !*
(1848) IV. 276.	,,	scoparia, *Meisn. MSS.*
III. 260.	,,	microcarpa, *R. Br. !*
IV. 597.	,,	Fraseri, *R. Br. ! suppl.*
	,,	juniperina, *Labill. !* (Gunn, n. 869, 537, 1238.)
(1848) IV. 274.	,,	sulcata, *Meisn. MSS.*
I.; IV. 596.	,,	quinquenervis, *Hook.*
(1848) IV. 272.	,,	tortifolia, *Meisn. MSS.*
(1848) IV. 273.	,,	rudis, *Meisn. MSS.*
	,,	Gunnii, *Hook. fil.* *Gunn, n.* 870, 1237. *Milligan, n.* 738.
I.; (1848) IV. 277.	,,	Laureola, *Lindl.*
I.	,,	longifolia, *R. Br.* (*P. Drummondii,* Lindl. !) *Gilbert, n.* 1.
V. Suppl. n. 5.	,,	trinervis, *Meisn. MSS.*
V. 403.	,,	dillwynioides, *Meisn. MSS.*
GREVILLEA		(inclus. *Anadenia* et *Conogyne*, R. Br., et *Manglesia*, Endl. ?)
I.	Grevillea	(Anad.) tenuiflora, *Lindl.*
	,,	(Anad.) pulchella, *R. Br. !* (Gilbert, sine no.)
I.; IV. 613.	,,	(Anad.) flexuosa, *Lindl. !*
I.; II. 313.	,,	(Anad.) Synapheæ, *R. Br. Meisn.* (*Anad. gracilis,* Lindl. !)
I.; IV. 619.	,,	(Anad.) quercifolia, *R. Br. suppl. Meisn.* (*An. brachyantha,* Lindl. !) *Gilbert, sine no.*
I.	,,	(Anad.) monticola, *Meisn. Pl. Preiss. v. 2. p.* 259. (*An. Aquifolia,* Ldl.)
II. 315, 323; IV. 624.	,,	(Conog.) biternata, *Meisn.*
II. 321.	,,	(Conog.) brevicuspis, *Meisn.*
II. 299; III. 266.	,,	(Conog.) Shuttleworthiana, *Meisn.*
III. 265.	,,	(Conog.) biformis, *Meisn.*
III. 268.	,,	(Conog.) leptobotrys, *Meisn.*
III. 300; V. Suppl. n. 8.	,,	(Conog.) petrophiloides, *Meisn.*
(1848) IV. 279.	,,	(Conog.) polybotrya, *Meisn. MSS.*

(1848) IV. 280.	Grevillea	(Conog.) didymobotrya, *Meisn. MSS.*
IV. 623.	,,	(Mangl.) tridentifera, *Endl. β.*
I.; IV. 621.	,,	(Mangl.) (cuneata, *Endl.*) *glabrata,* Lindl.
II. 314.	,,	(Mangl.) ornithopoda, *Meisn.*
I.; IV. 622, 620.	,,	(Mangl.) vestita, *Endl.*
II. 320.	,,	(Mangl.) β. subbiternata, *Meisn.*
II. 317, 318.	,,	manglesioides, *Meisn.*
I.; (1848) IV. 286.	,,	diversifolia, *Meisn.*
II. 316.	,,	,, β lobata, *Meisn.*
IV. 633.	,,	Hookeriana, *Meisn.* (Drum. n. 72, in Herb. Arnott.)
III. 271.	,,	teretifolia, *Meisn.*
(1848) IV. 282.	,,	tetragonoloba, *Meisn. MSS.*
(1848) IV. 284.	,,	armigera, *Meisn. MSS.*
(1848) IV. 283.	,,	asparagoides, *Meisn. MSS.*
I.; II. 328; IV. 636.	,,	eriostachya, *Lindl. !*
V. Suppl. n. 10.	,,	sericostachya, *Meisn. MSS.*
V. 404.	,,	Hewardiana, *Meisn. MSS.*
II. 319.	,,	brachystachya, *Meisn.*
III. 269.	,,	bracteosa, *Meisn.*
V. 406.	,,	nudiflora, *Meisn. MSS.*
IV. 625.	,,	crithmifolia, *R. Br. !*
IV. 637.	,,	Preissii, *Meisn.*
V. 407.	,,	chenophylla, *Meisn. MSS.*
IV. 634.	,,	Hügelii, *Meisn.*
III. 267.	,,	cirsiifolia, *Meisn.*
I.; IV. 631.	,,	Lindleyana, *Meisn.* (*G. Wilsonii,* A. Cunn. !)
(1848) IV. 285.	,,	tripartita, *Meisn. MSS.*
I.	,,	bipinnatifida, *R. Br.*
IV. 627.	,,	scabra, *Meisn.*
I.; IV. 628.	,,	Candolleana, *Meisn.*
(1848) IV. 281.	,,	pinifolia, *Meisn. MSS.*
I.; IV. 629.	,,	oxystigma, *Meisn.* (*Hakea pilulifera,* Lindl. !)
II. 324.	,,	umbellulata, *Meisn.*
II. 270.	,,	occidentalis, *R. Br. !*

II. 322. Grevillea brachystylis, *Meisn.*

II. 327; IV. 335. „ Drummondii, *Meisn.*

„ australis, *R. Br. Gunn. n.* 534, 730, 1260, 199, 535, 1240.

II. 325, 326. „ hakeoides, *Meisn.*

(1848) IV. 278. „ obtusifolia, *Meisn. MSS.*

„ tenuifolia, *R. Br.! Gunn, n.* 534.

„ scabrella, *Meisn. MSS. M'Arthur*, 134.

„ lanigera, *A. Cunn.! a* et *β*, *M'Arthur, n.* 135, 136, 137, 139, 140, *hb. Lindl.!*

„ glabella, *R. Br. suppl. Mitchell, Exped.* 1836, *n.* 199, *hb. Lindl.!*

„ nutans, *Meisn. MSS. Mitchell, Exped.* 1836, *n.* 219! *hb. Lindl.!*

„ capitellata, *Meisn. MSS.* (*G. diffusa*, A. Cunn.! non Sieb.)

„ Seymouriæ, *Sweet. M'Arthur, n.* 214, *hb. Lindl.!*

„ arenaria, *R. Br.! M'Arthur, n.* 133.

„ alpestris, *Meisn. MSS. Mitchell, Exped.* 1836.

„ *β.* helianthemifolia, *Meisn. Port Philip, Latrobe.*

„ Aquifolium, *Lindl.! Mitchell's Exped.* 1835, *n.* 194, 233, 232. *β*, *ib. n.* 244, *hb. Lindl.!*

„ dumetorum, *Meisn. MSS. Mitchell's Exped.* 1835. *R. Cunningham, n.* 210! *hb. Heward.*

V. 405. „ Lemanniana, *Meisn. MSS.*

„ callipteris, *Meisn. MSS.* (*G. Dryandri*, A. Cunn.! non R. Br.)

„ Wickhamii, *Meisn. MSS.* (Captain Wickham, Exped. of the Beagle, 1839. Herb. A. Cunningham!—Aff. *G. angulatæ*, R. Br.)

(*To be continued.*)

BOTANICAL INFORMATION.

Extract of a Letter from MR. JAMES DRUMMOND.

"Hawthornden Farm, Swan River, Dec. 28, 1851.

"I received your kind letter lately on the very day of my return from a long journey to the north of this place, of eighteen months' duration. Endlicher's 'Genera' has been of great use to me on this occasion. I have discovered several plants on this tour which evidently belong to new genera, and as soon as my collections arrive, which I expect in about a fortnight, I will make them up in sets and forward them to England without delay. Among the genera which I suppose new, there are two belonging to the *Proteaceæ:* one has the habit of *Persoonia,* but the seeds are nearly an inch long, and shaped like those of the ash; each follicle contains only one seed, and opens at the side. The other Proteaceous genus resembles *Dryandra Fraseri* in its foliage. The shrub grows to the height of 12 or 15 feet. Its seed-vessels are of the size and shape of a musket-ball, and contain each two seeds. A curious Cruciferous plant of my collection buries its seed-vessels in the earth, like the *Arachis hypogeæ.* I have several new Rutaceous genera, and a very fine plant of the family of *Asperifoliaceæ.* This latter grows 8 or 10 feet high, having a soft yet somewhat woody stem, like some of the large species of *Echium.* It has showy light blue flowers, and the mouth of the corolla is closed by a remarkable calyptra-like covering, rising from the back of the anthers, consisting of five pieces spirally twisted; the lower portions of these pieces are connected by closely interlaced fibres or cilia. Eventually the style and stigma rise above the spiral calyptra, forcing a passage through it. But among the most remarkable of my plants is a new leafless genus, belonging to *Dilleniaceæ,* having the general habits and appearance of *Daviesia juncea,* while the blossoms themselves are like those of *Candollea,* and have seven stamens; the filaments free, but the anthers united into a tube. Two climbing plants struck me as being curious: one has brownish-green flowers, shaped like a small *Clematis;* there are eight stamens, the four sepals are permanent, forming a kind of wings to aid the dispersion of the seeds. It probably belongs to *Sapindaceæ.* But to me the most remarkable of all the plants I found is a small deciduous tree, with a compact rounded top, the branches spreading in all directions, having a trunk a foot in diameter: it perhaps belongs to the *Acerineæ*. Its peculiarity consists in the varied states of the foliage in different individuals. In some the plants were in full foliage, and just beginning to blossom; in some they were just bursting into leaf; while others were quite destitute of leaves, the foliage having fallen on the ground beneath. All these were within a short distance of each other, and I could see no cause for so striking a difference among them. My collection contains seven new *Banksias*, but the allied genus *Dryandra* is by no means so plentiful in the north. I reckon, however, three new *Dryandras;* all small species, but of the *Banksias* two form trees, with a trunk from 12 to 18 inches in diameter. One of these arborescent species has globose heads of flowers of a metallic green colour, and its follicles clothed with white waxy warts; the other has leaves like a pine.

"I could have procured many more plants in the north, but for the character of the natives, who were so troublesome that I could only make excursions armed with a double-barrelled gun, and in company with mounted police. Both myself and my son John, who is at the head of the police here, had several narrow escapes with our lives. At one time there were two hundred natives invited to the feast they intended to make on our bodies after they should have killed him and me; but providentially they did not succeed in their murderous designs upon either of us."

NOTICES OF BOOKS.

HOOKER, JOSEPH DALTON: FLORA OF NEW ZEALAND; *being the second Portion of the* 'BOTANY OF THE ANTARCTIC VOYAGE.' *Published under the Authority of the Lords Commissioners of the Admiralty*. Part I., 4to. 20 Plates. London: Reeve and Co.

In bringing out the present valuable work, Dr. Hooker is only fulfilling a pledge given to Government and to the public on his return from the Antarctic Discovery Voyage, viz., that he would publish the Flora of three respective regions visited during that circumnavigation, viz.,—I. The ANTARCTIC FLORA. II. The FLORA OF NEW ZEALAND. III. The FLORA OF VAN DIEMEN'S LAND, or the TASMANIAN FLORA. The first portion was completed in a surprisingly short space of time, considering the care and pains bestowed upon it and the number of new plants, in 2 vols. 4to, with 198 plates, and a map of the Polar regions. The second portion has been delayed in consequence of the author's mission to Eastern Himalaya, but it is now commenced with great spirit; and when we think of the rapidly increasing population of our colony of New Zealand, and that there is no distinct work giving any account of the vegetable products of a British territory extending through thirteen degrees of longitude (and, alas! the same may be said of all our colonies—there is no "Flora" of any one of them!) it must be conceded that such a work has been a great desideratum; and it is intended for the settler as well as for the professed botanist. It is accompanied by admirable plates (coloured or uncoloured), and the author dwells much on the useful properties of the New Zealand plants. The *Cowdie*, or New Zealand Pine, for example, is pre-eminent among timbers in the construction of masts for the navy; and the consumption of New Zealand Flax is very great. The present Part, occupying eighty pages, extends as far as *Saxifrageæ*. Of the plates, twenty in number, we need say no more than that they are in Mr. Fitch's best style.

WIGHT: *Icones Plantarum Indiæ Orientalis*. 4 thick 4to volumes, and 1 Fasc. of Vol. V. 1762 plates. Madras.

In 1840, in the second volume of the 'Journal of Botany,' p. 175, we noticed the first five numbers of this work, and at the same time detailed at length the great difficulties attending the preparing the plates, and especially lithographing them in India. We then said, "It is no small merit of this work, that the labour of printing the greater proportion of these plates has been undertaken by Dr. Wight himself. These plates are really excellent, especially those of the latter numbers." Excellent indeed they were, but far inferior to those that have since appeared; in fact, those in the last two vols. may claim to rank along with those put forth by most European artists; and when we consider their extreme cheapness (about 2½*d*. for each quarto plate is their price in India), we know not any work that can vie with it in execution.

The first part of Vol. V. is before us, terminating with tab. 1762! and containing 139 plates of *Orchidaceæ;* so that in the course of the eleven or twelve years in which Dr. Wight has been engaged in its publication, he has brought out scarcely fewer than 150 plates annually. These sometimes are copied from Roxburgh's unpublished drawings, and occasionally from dried specimens, but generally from the living wild plant; on their accuracy, therefore, we place every reliance, and indeed so anxious is Dr. Wight himself on this point, that he has in most cases, perhaps in every case, detected the error and corrected it in the accompanying short descriptions. From the artist not understanding English, far less Latin, we have frequently the names on the plates at variance with those in the letterpress; this however is a venial error, which any one may correct for himself.

It may not be uninteresting here to notice the principal families illustrated by Dr. Wight. To *Balsaminaceæ* 24 plates are devoted; to *Leguminosæ*, 153; to *Myrtaceæ*, 73; *Rubiaceæ*, 80; *Compositæ*, 83; to the genus *Utricularia*, 23, and of the Indian species there is a monograph in his 'Illustrations of Indian Botany,' vol. ii. p. 134. To the *Apocynaceæ* 64 plates are given; to the curious but difficult *Asclepiadaceæ* no less than 72; to *Convolvulaceæ*, 44. In *Scrophulariaceæ* we find 26; *Labiatæ*, 40; *Verbenaceæ*, 32; in the difficult *Acanthaceæ*, no fewer than 111; *Amaranthaceæ* are illustrated by 21 plates; *Urticaceæ*, including *Moreæ*, by 61; the *Araceæ*, by 42; and the *Orchidaceæ*, an order quite unintelligible to the great majority of botanists without accurate plates, by the great number of 171, almost one-tenth of the whole work hitherto published.

Thus by the labours of one man, more plates illustrative of the flora of India have been published, than by all preceding writers taken conjointly. It is true Rheede and Rumphius both published works of plates, and that many East Indian plants have been noticed by Plukenet; but none of these can be depended on; the drawings are often so distorted that they—witness the plates, or even the order to which they belong, of Rumphius—can only be made the subject of unfruitful guesses; while the dissections, on which botanists chiefly rely, tend only to deceive. We therefore again congratulate the public on the appearance of this work, which we learn is to be completed by the fifth volume.

We expected that the author himself might have been amongst us in this country by the beginning of the present year (1852); but circumstances, with which the public have no concern, induce him, we learn, to remain in the East till the spring of 1853. No member of the Imp. Soc. Nat. Cur. ever merited better the appellation of "nunquam otiosus" than this modern Roxburgh, Dr. Wight; and we sincerely trust, that although for the next year other duties must interfere with his botanical ones, he may return to his native country, with health unimpaired, to distribute with princely liberality the enormous collection he has now amassed, no portion of which has been sent to Europe, we believe, since 1837.

WIGHT: *Illustrations of Indian Botany.* 2 vols., 4to, with numerous Plates. Madras.

While noticing the 'Icones Plantarum,' we must not omit all mention of the no less well-executed 'Illustrations' of the same author, now extended to 2 vols. 4to, with 182 plates, coloured; many of these plates containing each an analysis of a considerable number of Genera, so that the work contains a great deal more than it promises, viz.,—"Figures illustrative of each of the Natural Orders of Indian plants described in the author's 'Prodromus Floræ Indiæ Orientalis,' with observations on their botanical relations, economical uses, and medicinal properties; including descriptions of recently discovered or imperfectly known plants." With such a mass of information, pictorial and descriptive, it is quite clear that the 'Illustrations' of Dr. Wight are as indispensable as the 'Icones,' and its publication adds fresh laurels to his name. Already, following the arrangement of De Candolle, the author has reached to the 124th Order, *Salvadoraceæ*.

DE CANDOLLE: *Prodromus Systematis Naturalis Regni Vegetabilis.* Part I. of Vol. XIII.

We are glad to learn that the first part of the 13th volume of this invaluable work, containing the *Solanaceæ*, by Dunal, and the *Plantagineæ*, by Decaisne, has at length appeared. The *second* part of Vol. XIII. (including five orders of *Monochlamydeæ*), our readers are aware, was published in 1849.

FLORULA HONGKONGENSIS: *an Enumeration of the Plants collected in the Island of Hong-Kong, by* Major J. G. Champion, 95*th Reg.*, *the determinations revised and the new species described by* GEORGE BENTHAM, ESQ.

(*Continued from p.* 172.)

RUBIACEÆ (*continued*).

10. Mussænda *pubescens*, Ait.—DC. Prodr. vol. iv. p. 371.

Common in ravines, flowering in April and May.

11. Mussænda *erosa*, Champ., sp. n.; foliis ovatis acuminatis glabris, stipulis profunde bifidis, corymbo laxe multifloro, lobis calycinis linearibus tubo vix æqualibus uno hinc inde maximo petiolato, corollæ pilosulæ tubo elongato lobis latis acuminatis.—*Caules* et *folia* glabra; hæc fere *M. pubescentis*, margine tamen sæpe eroso-crispula. *Stipulæ* latiores et sæpius minus divisæ, caducæ. *Corymbi* ampli, trichotomi, terminales, ramis primariis elongatis, ultimis abbreviatis, floribus sessilibus. *Calyx* glaber, lobis vix linea longioribus; lobi bracteæformes (v. bracteæ adnatæ) in corymbo pauci, ovato-orbiculares, 2–3-pollicares. *Corollæ* tubus 9–10 lin. longus, basi glaber et tenuis, superne dilatatus et pilis paucis adpresse pubescens, intus superne parce pilosus, fauce villis fere clausa; lobi 2 lin. lati, breviter acuminati, supra papillosi. *Stamina* supra medium tubi inserta, inclusa, filamentis brevibus, antheris linearibus. *Placentæ* stipitatæ, ovulis numerosissimis.

Happy Valley. Readily distinguished from *M. pubescens* by the size of the corolla and the shape of its divisions.

12. Gardenia *florida*, Linn.

Abundant in a ravine on Mount Gough, also Mount Victoria, and other localities.

13. Randia *dumetorum*, Lam.—DC. Prodr. vol. iv. p. 385.—var.? parviflora.

A single specimen from Little Hong-Kong.

14. Randia *Sinensis*, Rœm. et Schult.?—Hook. et Arn. Bot. Beech. p. 191.

Little Hong-Kong. The specimen is a small one, with the flowers scarcely open, and is most probably the same species as the one considered by Hooker and Arnott to be the *Oxyceros Sinensis* of Loureiro, although neither our materials nor Loureiro's description admit of positive identification. It belongs to the same section of *Randia* as the *R. longiflora*, but is certainly not identical with that species.

15. Randia sp.? A single specimen in bud only, but evidently distinct from the preceding.

16. Randia? *leucocarpa*, Champ., sp. n.; inermis, fruticosa, foliis oblongis acuminatis subtus ad costam ramulisque strigosis, floribus terminalibus axillaribusve 1–3-nis brevissime pedicellatis, calycis limbo campanulato breviter 5-dentato, corollæ tubo brevi, bacca 2–3-sperma.—*Frutex* pedalis, ramosissimus. *Rami* juniores dense strigoso-pilosi, vetusti glabrati, vaginis stipularibus nodosi. *Stipulæ* utrinque solitariæ, triangulares, acuminatæ, caducæ, axilla barbata. *Folia* breviter petiolata, 1½–2-pollicaria, anguste v. late oblonga, plus minus acuminata, basi angustata v. rotundata, margine recurva, præter costam venasque paucas subtus strigosas glabra. *Florum* alabastra juniora tantum vidi: hæc parva sunt et iis *Griffithiæ fragrantis* haud dissimilia, pentamera, ovario biloculari, loculis pluriovulatis, stylo apice bifido. *Baccæ* pedicello 1–2-lineari fultæ, subglobosæ, 4–6 lin. diametro, albæ. *Semina* 2 v. 3, rarius 4, pulpa nidulantia, majuscula, ovoidea, testa crustacea albida, albumine cartilaginea. *Embryo* parvus, radicula tereti cotyledonibus ovatis longiore.

From the top of Victoria Peak. Allied in habit on the one hand to the *Diplospora viridiflora*, on the other to Cuming's n. 1514, from the Philippine Islands, which is an undoubted *Randia*. Another single specimen in Major Champion's own herbarium, from the Happy Valley woods, also with white fruit, but with longer, membranous, acuminate leaves, may prove to be a distinct species.

17. Randia? *canthioides*, Champ., sp. n.; glabra, inermis, foliis oblongis acuminatis, cymis subsessilibus axillaribus 5–7-floris, pedicellis calyce paulo longioribus, calycis limbo campanulato breviter 5-dentato tubo corollæ dimidio breviore, corollæ laciniis oblongis acutis reflexis tubo suo paulo brevioribus.—*Ramuli* novelli compressiusculi, demum teretes. *Stipulæ* latæ, acutæ, linea paulo longiores, deciduæ. *Petioli* 3–4 lin. longi. *Folia* 3–4-pollicari, basi acutiuscula. *Pedunculi* communes vix lineam longi, ramis raro 2 lin. longis. *Bracteæ* squamæformes, in cupulam parvam connatæ. *Pedicelli* 3–4 lin. longi. *Calyx* campanulatus, glaber, parte adnata vix lineam

longa, limbo 2-lineari, dentibus inæqualibus, omnibus tamen parte integra pluries brevioribus. *Corollæ* tubus 4 lin. longus, crassiusculus, extus glaber, intus sub fauce pilosus; limbi laciniæ glabræ, æstivatione contortæ. *Stamina* ad faucem inserta. *Stylus* exsertus, apice clavatus, lobis erectis (v. demum patentibus?). *Discus* epigynus pulviniformis. *Ovarium* carnosum, biloculare, placentis tenuibus, ovulis plurimis, nonnullis etiam sub anthesi minimis abortivis. *Bacca* 3–4 lin. diametro. *Semina* in quoque loculo 1–4, angulata, pulpa tenui intermixta.

Abundant in ravines of Victoria Peak, flowering about April. The angular seeds are more like those of some species of *Stylocoryne,* and in my specimen the lobes of the style are scarcely separated, but they are in fact distinct and considerably dilated, and the inflorescence is rather that of *Randia* than of *Stylocoryne.*

18. Diplospora *viridiflora,* DC., Prodr. vol. iv. p. 477.

A common shrub on Victoria Peak. Bark reddish-brown or ashy. Leaves very variable in size, from 2 to 4 or 5 inches. Flowers straw-coloured. Fruit, ripe in October, reddish, the size of a pea, with one or two seeds in each cell. In April, 1849, after heavy rains, Major Champion found shrubs with six to ten flowers in each cyme or fascicle, and each corolla 4½ lines in diameter; at other times the flowers are fewer in number, and scarcely 3½ lines in diameter. The larger-leaved and smaller-flowered specimens are precisely similar to an original one of *Canthium dubium,* Lindl. (*Diplospora,* DC.) from the Horticultural Society's Garden. I find, however, the ovules in each cell of the ovary to vary from two to three or four, with the addition, occasionally, of two or three small abortive ones. Major Champion in the fresh specimens observed about six in each cell. This brings the genus very near to some sections of *Randia,* of which it has much of the habit, and from which it differs chiefly in its tetramerous flowers. From *Canthium,* of which it has also in some respects the habit, it differs widely in the æstivation of the corolla and the structure of the ovary.

19. Stylocoryne *Webera,* A. Rich.—Wight et Arn. Prodr. vol. i. p. 401.

Happy Valley, scarce.

20. Stylocoryne *mollissima,* Walp., Rep. vol. ii. p. 517.—Tota planta molliter pubescens. *Stipulæ* lanceolatæ, 2–3 lin. longæ. *Folia* ovata v. oblongo-lanceolata, acuminata, 3–5-pollicaria. *Corymbus*

densus. *Calycis* tubus globosus; limbus vix tubo brevior, dentibus brevibus latis obtusis. *Corolla* extus pubescens, tubo 1½ lin., limbi laciniis oblongis 2½ lin. longis, supra glabris, fauce villis clausa. *Stylus* longe exsertus, clavatus. *Ovarium* biloculare, placentis peltatis carnosulis, ovulis in quoque loculo circa 20. *Bacca* globosa, 3 lin. diametro, calycis limbo demum sæpe obliterato coronato. *Semina* angulata, in quoque loculo 13–14.

Scarce in Hong-Kong; in the Happy Valley woods, on Mount Victoria, and at the Buddhist Temple.

21. Morinda *umbellata*, Linn. var.? foliis brevibus obovali-oblongis brevissime acuminatis, floribus paulo majoribus.—*M. versicolor*, Hortul.

As common in Hong-Kong as the true *M. umbellata* (with long narrow leaves) is in Ceylon. It was formerly cultivated in the Horticultural Society's Garden under the name of *M. versicolor*, raised, we believe, from Chinese seeds, and may possibly prove specifically distinct from the common East Indian form.

22. Mephitidia (Lasianthus) *Chinensis*, Champ., sp. n.; fruticosus, ramulis teretibus apice compressis tomentellis, stipulis latis breviter acuminatis, foliis petiolatis elongatis acuminatis basi acutis supra glabris subtus tomentellis, floribus aggregatis subsessilibus, bracteis minutis, calycibus ovoideis minute dentatis, corolla extus hirsuta ovarioque 4–6-meris.—*Ramuli* juniores ad nodos valde compressi, demum teretes. *Pubes* brevissima, sæpe rufescens. *Stipulæ* cum acumine latitudine rami breviores. *Petioli* 3–5-lineares. *Folia* 6–10 poll. longa, 1½–2½ poll. lata, subcoriacea, supra nitidula, venis utrinque conspicuis. *Florum* fasciculi axillares, subsessiles, 3–5-flori, petiolis breviores. *Calyx* 1½ lin. longus, parte adnata brevissima, limbo superne contracto, dentibus brevibus ovatis recurvis marginibus incurvis. *Corolla* sæpius 5–6-mera intra calycem tetramerum, rarissime (ex obs. cl. Championi in vivo) cum calyce isomera, tubo 2 lin. longo intus superne piloso; laciniæ tubo æquilongæ, lanceolatæ, extus villosissimæ, intus glabræ, acumine inflexo crasso, æstivatione valvata. *Ovarium* sæpius 5–6-loculare, rarius 4-loculare, ovulis erectis. *Discus* epigynus crassus. *Styli* lobi tot quot ovarii loculi, lineares, breves. *Drupa* recens globosa, pubescens, cærulea, 5–6 lin. diametro, calycis limbo coronata, in sicco sulcato-lobata; pyrenis 5–6, rarius 4, ovoideo-triquetris, duris, rugosis.

Wong-ny-Chung Valley, Victoria Peak, etc. Flowers in May and ripens its fruit in the middle of July. As a species it comes near in character to that of *M. longifolius* from Malacca, and to some of the Javanese ones very shortly described by Blume, but is quite distinct from any with which I am acquainted.

23. Guettardella *Chinensis*, Champ., gen. nov. *Guettardearum*, affine *Guettardæ* et *Chomeliæ*.

Char. Gen. GUETTARDELLA. *Calycis* limbus profunde 4-lobus, persistens. *Corolla* tubulosa, limbi laciniis 4 brevibus subpatentibus, æstivatione leviter imbricata. *Stamina* sub fauce inserta, filamentis brevissimis. *Ovarium* 4–5-loculare, ovulis in quoque loculo solitariis ab apice pendulis oblongis. *Stylus* apice 4–5-lobus, lobis linearibus. *Drupa* pyrenis 4–5 duris monospermis.—*Frutices* foliis oppositis. *Stipulæ* utrinque solitariæ, integræ, acuminatæ, deciduæ. *Pedunculi* axillares apice triflori, floribus parvis bibracteolatis sessilibus, intermedio alari, lateralibus ramos perbreves terminantibus bractea subtensis. *Corollæ* extus tomentosæ.—*G. Chinensis*, foliis oblongo-lanceolatis acuminatis subtus subsericeo-pubescentibus, calycis laciniis subæqualibus tubo suo brevioribus*.—*Frutex*, ramulis novellis pube adpressa canescentibus rufescentibusve. *Stipulæ* latæ, acutæ, vix lineam longæ, cito deciduæ. *Folia* 1–2-pollicaria, longe et acute acuminata, basi acuta, supra parce hirtella v. glabra, subtus pilis adpressis sericeis canescentia, venis primariis paucis pinnatis subtus prominentibus, secundariis tenuibus, eleganter transversis, petiolo 1–2 lin. longo. *Pedunculi* 2–4 lin. longi. *Bracteæ* laterales lineares, calycem subæquantes, bracteolæ breviores. *Calyx* vix lineam longus, tomentellus, lobis brevibus obtusis. *Corolla* 2 lin. longa, lobis brevissimis obtusis. *Drupa* ovoidea, pubescens, 2 lin. longa, tetrapyrena.

On Mount Gough and Mount Victoria; flowering in June. The genus is certainly nearly allied to *Guettarda*, but the calyx, tetramerous flowers, and inflorescence are rather those of *Chomelia*, from which it differs in the number of carpels of the ovary and fruit being four or five instead of two only.

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* Cuming's n. 1827, from the Philippine Islands, is a second species, which may be thus characterized:—*G. Philippinensis;* foliis ovali-ellipticis oblongisve breviter acuminatis subtus ramulisque laxe hirtellis, calycis laciniis inæqualibus linearibus tubo longioribus.—*Foliorum* venæ secundariæ reticulatæ, ultimæ tantum transversæ. *Pedunculi* graciles, folia interdum subæquantes. *Ovarium* vidi 5-merum in flore 4-mero.

24. Canthium *undulatum*, Champ., sp. n.; fruticosum, inerme, foliis longiuscule petiolatis ovali-oblongis acuminatis margine undulatis coriaceis glabris supra nitidissimis subtus ad axillas venarum glandulosis, cymis axillaribus breviter pedunculatis petiolum paulo superantibus, floribus pentameris.

Happy Valley woods; rare. Very near to the East Indian *C. didymum*, and still more so to Arnott's *C. lanceolatum* from Ceylon, and perhaps with some others should be considered as a mere variety of Gærtner's species. The petioles are, however, much longer (about half an inch); the leaves narrower, more acuminate, and usually undulate on the margins, and the stipules much shorter. The fruit in a young state is ovoid, without the lateral furrows, which however, in most *Canthia*, are only to be seen in an advanced stage.

25. Ixora *stricta*, var. *incarnata*, Roxb. Fl. Ind. vol. i. p. 379, ejusd. ed. Wall. p. 389.

Woods near the Buddhist Temple, East Point. Flowers pale pink. Not distinguishable in the dried state from the white-flowered *I. blanda*, or *I. alba*, Roxb. (non Linn.), which, as suggested by Roxburgh, appears to be a mere variety of *I. stricta*.

26. Pavetta *Indica*, Linn.—DC. Prod. vol. iv. p. 490.

Happy Valley and West Point.

27. Psychotria *elliptica*, Ker.—DC. Prod. vol. iv. p. 490.—*P. Reevesii*, Wall. DC. l. c. p. 519.—*Grumilia Reevesii*, Hook. et Arn. Bot. Beech. p. 193.

Very common in Hong-Kong. Berries red when ripe. Certainly a congener with the numerous species of the section *Mapouria* of *Psychotria*, and very nearly allied to the common South American *P. alba*. It is indeed very doubtful whether any portion of *Grumilia* can be maintained as a genus distinct from *Psychotria*.

28. Psychotria *serpens*, Linn.—DC. Prod. vol. iv. p. 519.—*P. scandens*, Hook. et Arn. Bot. Beech. p. 193.

Common in Hong-Kong. Berries white. There appear to be two varieties, one with the inflorescence less divided and the berries more succulent than the other, but possibly gathered in different states, and I cannot, from the specimens before me, either from Hong-Kong or from the main land, detect any specific differences.

29. Pæderia *fœtida*, Linn.—DC. Prod. vol. iv. p. 471.

Mount Victoria. Corolla 6 lines long, white, with a slight tinge of pink and curiously frosted; the throat hairy with a deep pink spot in the shape of a star, the rays of which extend between the segments.

30. Borreria *discolor*, Bartl.—DC. Prod. vol. iv. p. 545?

31. Spermacoce *hispida*, Linn.—DC. Prod. vol. iv. p. 555.

32. Knoxia *corymbosa*, Willd.—W. et Arn. Prod. vol. i. p. 439.

Of the above three last species there are single specimens only, without the precise localities.

In the recent numbers of Walpers' 'Annales Botanices Systematicæ' Mr. Hance has described two additional *Rubiaceæ** from Hong-Kong, *Gardenia daphnoides*, Hance, which differs in inflorescence and in its tetramerous flowers from all *Gardeniæ* known to me, and *Galium sororium*, Hance, evidently very near to if not identical with some of the forms of the common *G. Aparine*, which is now found in almost every part of the globe visited by Europeans.

(*To be continued.*)

Note on TETRATHECA; *by* DR. ASA GRAY.

In an article of some interest on the 'Organogénie de la Classe des Polygalinées,' in the 'Annales des Sciences Naturelles,' no. 6 for 1851, M. Payer states, that Mr. Brown characterized the two genera on which he founded his Order *Tremandreæ* thus:—*Tremandra*, by the quinary symmetry of the flower, the uniovulate cells of the ovary, and the dehiscence of the anthers at the summit by a pore; *Tetratheca* by its quaternary symmetry, biovulate cells of the ovary, and the stamens opening at the extremity of the tube. And he proceeds to remark, that the first and third of these characters are of no value, and that the second "*repose sur une erreur.*"

That Mr. Brown should commit a mistake of this kind is so unlikely that it naturally calls attention to the statement, especially as the authority of Mr. Steetz, who has attentively studied this small group, is adduced to confirm it. A cursory examination shows, however—1, that the ovules are not always solitary in this family, as M. Payer supposes; 2, that Mr. Brown did not distinguish the two genera in the manner asserted.

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* The preceding numbers of vol. ii. of Walpers' 'Annales' reached this country after the publication of the previous portions of the present Florula. They contain diagnoses of several Hong-Kong plants considered by Mr. Hance as new. Some, however, appear to be old species, which the want of means of comparison in herbaria has prevented him from recognizing; others will be found to be identical with some of the new species described in this Florula under other names. There are a few however, which, judging from the characters given, I do not at all recognize in the collections before me.

In his character of *Tremandreæ* (Appendix to Flinders' Voyage, p. 12) we find the phrase "ovarium 2-loculare, loculis 1–3-spermis." Among the few species examined, I found two (superposed) ovules in each cell of the ovary of *Tetratheca juncea* and *T. thymifolia*, and three (the two upper collateral) in *T. affinis*. It is singular that Steetz (Plantæ Preissianæ, vol. i. p. 212) should have seen only solitary ovules in these and in all the species he repeatedly examined; since Endlicher (Pl. Hugel. p. 7) had described the cells as biovulate in his *T. affinis* and *T. setigera*. Mr. Brown's character of the Order, therefore, is not erroneous in this respect.

As to the diagnosis of the two genera, those who are familiar with Mr. Brown's writings will not be surprised to find that he has entirely refrained from mentioning their distinctive characters, either directly or indirectly. It was De Candolle, and not Mr. Brown, who assumed that *Tetratheca* was always tetramerous, and *Tremandra* pentamerous; and it was Endlicher, in his 'Genera Plantarum,' who assumed that the cells of the ovary were always biovulate in *Tetratheca*, he having previously found them so in two species which he had previously examined. In *T. ericæfolia*, and some other species, the ovules are undoubtedly solitary.

Cambridge Univ., Massach. U.S.A., May, 1852.

On the CAMPHOR-TREE *of Borneo and Sumatra*, DRYOBALANOPS CAMPHORA, *Colebr.; by* SIR W. J. HOOKER, D.C.L., F.R.A. and L.S.

(TAB. VII. and VIII.)

> "Borneo here expands her ample breast,
> By Nature's hand in woods of *Camphire* drest:
> The precious liquid weeping from the trees,
> Glows warm *with health*, the balsom of disease."
>
> *Camoens' Lusiad, transl. by Mickle.*

After the admirable account of the *Dryobalanops*, given by Dr. and Professor De Vriese in the 'Nederlandsch Kruidkundig Archiff,' vol. iii. p. 1, (most kindly translated into English and condensed by the

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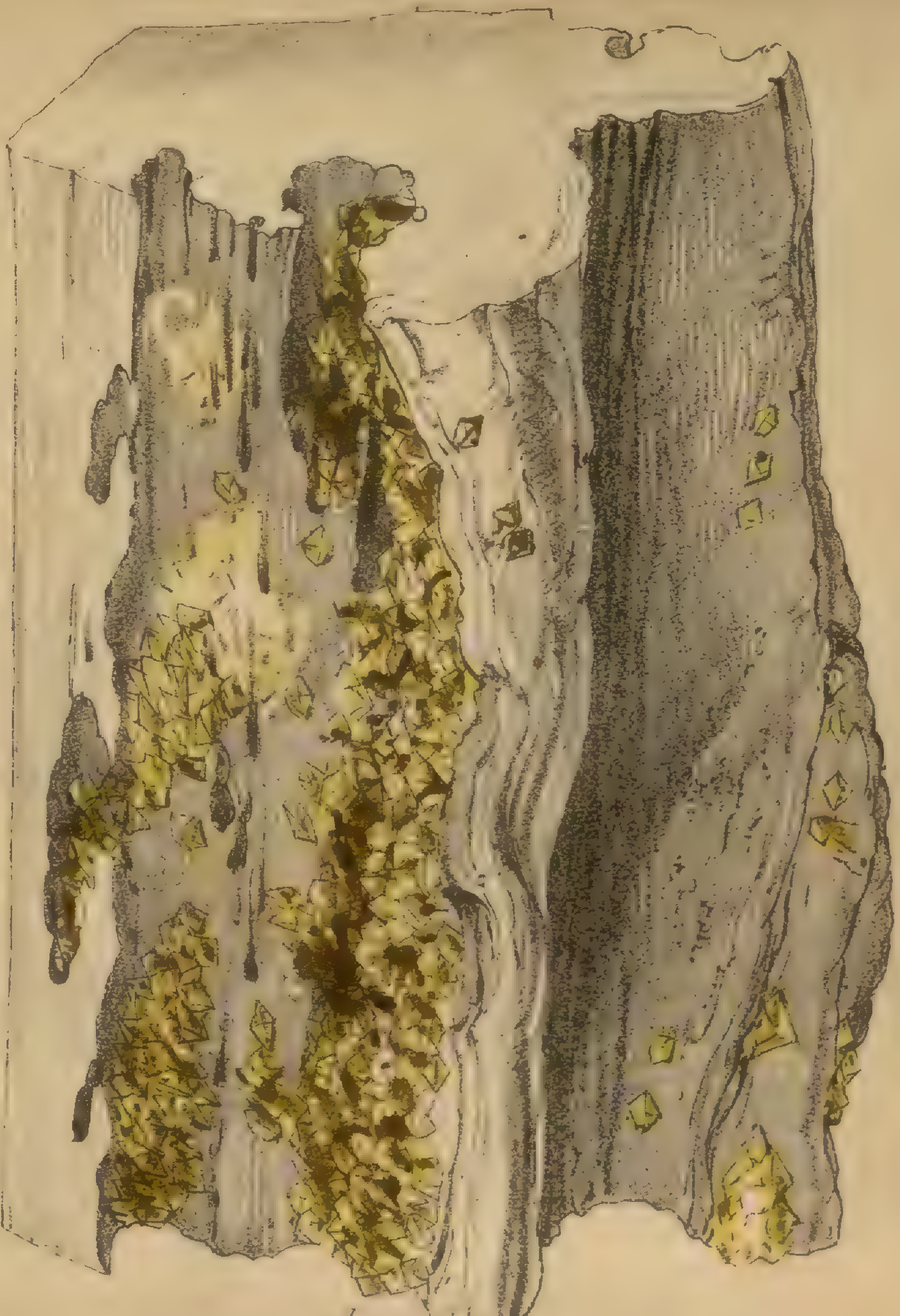

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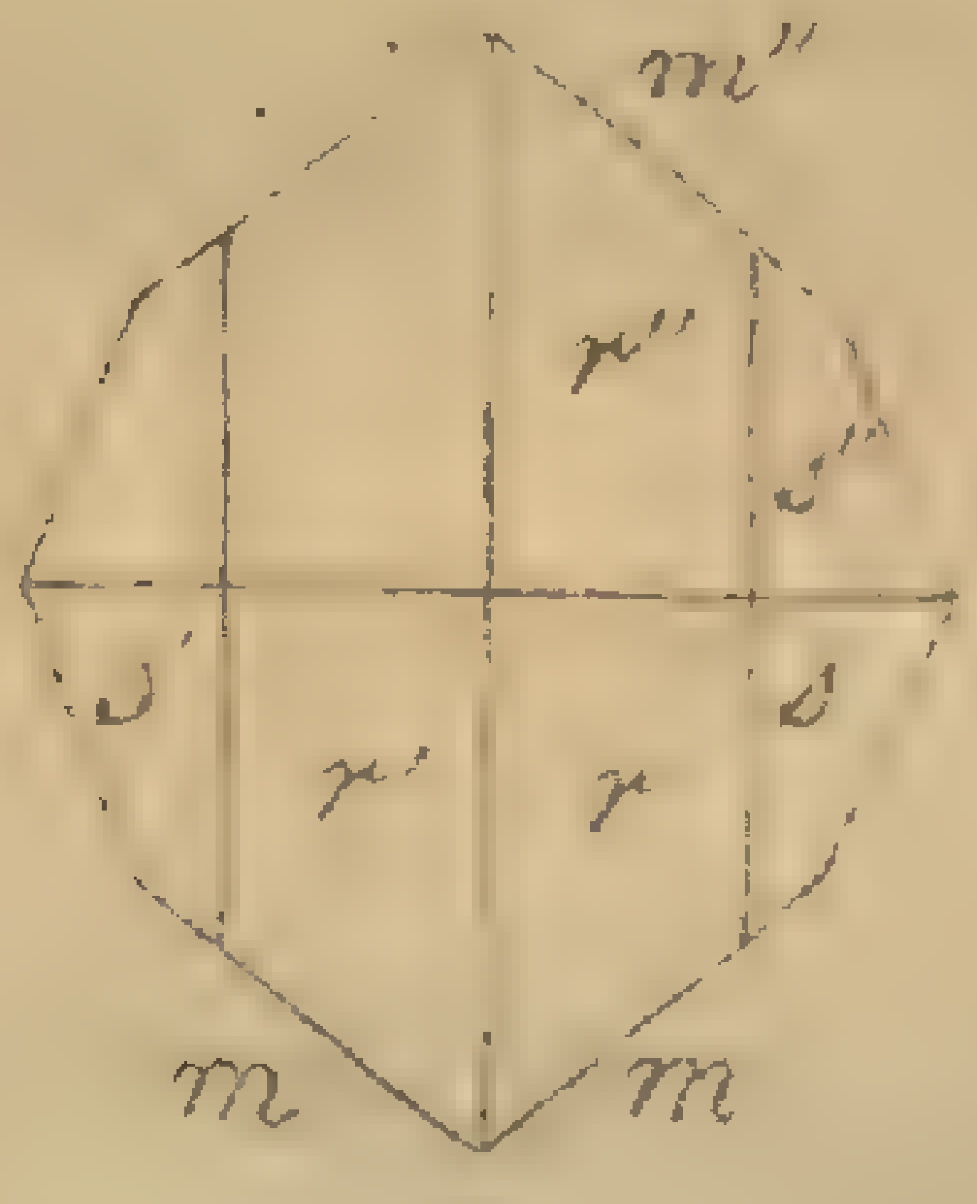

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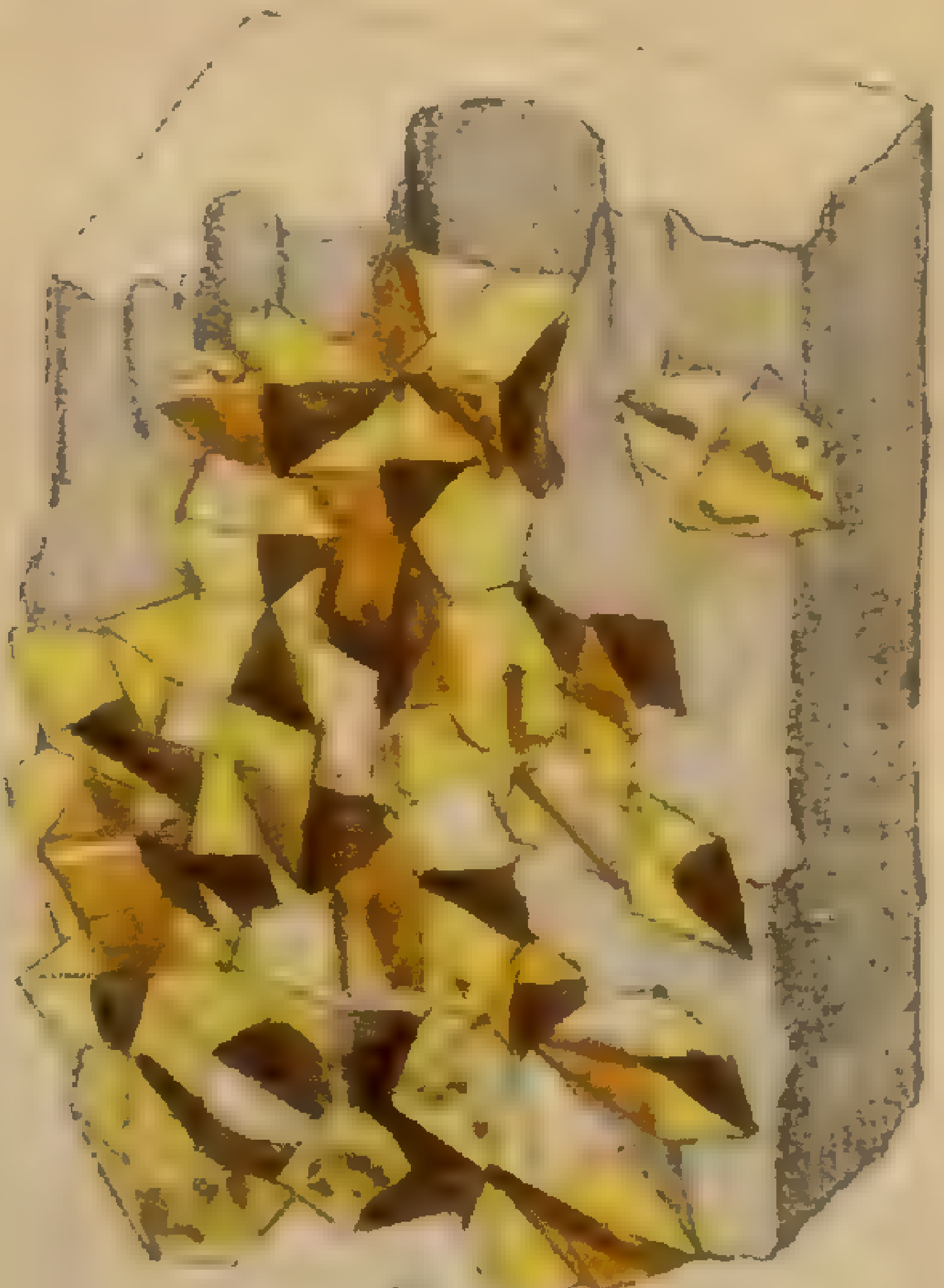

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Reeve, imp.

ryobalanops

accomplished daughter of that gentleman, Mademoiselle De Vriese, for this Journal: see p. 33 of our present volume,) any further notice might seem superfluous; but, while the memoir now alluded to was printing for this Journal, we had the great satisfaction of receiving from James Motley, Esq., of Borneo, specimens of the rare plant itself (though only in fruit), and a noble sample of the trunk, laid open, with the crystals *in situ*, together with the camphor and oil in different states, and some notes on the locality and commercial value of the camphor. This valuable series of preparations is deposited in the Museum of Economic Botany of the Royal Gardens of Kew, and I am desirous now of laying some of the particulars communicated by Mr. Motley before the public in the pages of our Miscellany, as a little supplement to the very full memoir above alluded to.

"I have the pleasure of sending you," writes Mr. Motley from Labuan, May 13, 1851, "what I hope will be a novelty for your museum, a specimen of the '*Kassur Baras*' or Camphor of the *Dryobalanops* in the wood. The specimen is part of a tree cut down here the other day, in clearing the ground for some of my colliery operations; it exhibits well the way in which the camphor is deposited from the so-called camphor-oil, which filled the hollow of the tree. We saved about five gallons of it and much was lost. I enclose a bottle of it in the same case, also a small phial of the white resin, yielded by the wounded bark of the living tree in small quantities only; unlike the *Shoreas* and other allied trees, which are, when old, frequently covered for some feet from the ground with a crust of resin. The little packet of seeds of an *Abrus*, or something of the sort, is always used by the natives to preserve the camphor, a few being placed in every packet; their supposed influence is of a magical nature, preventing, as it is said, the spirit of the camphor from flying away; it is usually packed in quantities of about a quarter of a pound in the leaf of some flabelliform palm, which I have not yet seen growing, and of which I cannot at the moment procure a sample. The specimen sent is valuable only from its being *in situ*, for as the drug is principally procured on the high mountains in the interior of Borneo, I have been unable to obtain such a sample of the fine white crystals, which are the most valuable in commerce, being just now, when cleaned and picked, worth about thirty dollars per catty, or about £4 15*s*. per lb. The present sample would be of much less value. It is sent only to China, where it is much valued, being used in medicine as a tonic and aphrodisiac, exactly the opposite qualities to those which we attribute to the *Laurus*-camphor. It is also much used for inflamed eyes, to which the Celestials are very subject, a small grain being from time to time placed under the lid. The smell is pleasanter than that of the ordinary camphor, and it does not become sublimed so rapidly in the air. The oil seems to consist of a very volatile essential oil, holding in solution a resin, which on a few days' exposure to the air is left in a syrupy state. It also yielded me a small quantity of crystallized camphor, on distillation with a very rough extempore apparatus. I have found it, by many trials on myself and others, to act powerfully and decisively as a diuretic in tiresome nephritic pains, to which we sojourners in the 'bowels of the land' are very subject, and it does not nauseate as turpentine frequently does on repetition. It is also here a popular remedy for rheumatism, being rubbed into the affected part. It is also a fragrant, quickly-drying, and well-bodied varnish, for which purpose I have used it largely. It requires rubbing until dry, like French polish. China is as yet the sole market, where it is used principally for embalming; its value here is about 20 cents (10*d.*) per bottle, in China about half a dollar. The resin is of no use as far as I know, except that the natives are fond of applying it, as in fact they do almost every gum they pick up, to all sorts of cuts and wounds, which, as may be expected, hardly ever heal without a tedious sore. The timber of the *Dryobalanops* is very hard, dense, and difficult to work with a plane, is of a reddish hue when first cut and very fragrant, but changing to a light brown; it bends readily, and is preferred by the Malays to all other woods for planking their boats. Upon some of the hills in Labuan, Camphor-trees form at least half the jungle; but the drug is rarely met with on this island, and, where most common, not one tree in twenty yields any; hardly a tree of any size, however, is to be seen, which has not been tried by cutting a hole in the side of the trunk. They are the noblest trees, not merely of our jungle, but the handsomest I ever saw; the trunk being very tall, round, and straight, furnished with huge buttresses at the base, and covered with a light brown, smooth, scaling bark; the head dense, well formed, and large for a jungle tree, the leaves very rigid and bright, and of a good dark green, and the fragrance of the beautiful white flowers most delicious. The fruit, though smelling most powerfully of spirits of turpentine, is greedily eaten by a small parroquet, of which I have sent home a specimen to Mr. Lewis Dillwyn of Swansea. I have observed that the leaves immersed in water very soon tinge it blue. The largest tree I have yet seen here was a *Dryobalanops*. The following were its dimensions:—

Height from the ground to the top of the buttresses	25 ft.
Girth at the root, following the buttresses in and out	333
Girth above the buttresses	8½
From ground to first branch	92
From ground to highest twigs	130

I have seen several higher trees, indeed I cut one 152 feet without a branch, but not one looking so huge as this, from the enormous size of its buttresses, which were like a great wall."

Again, June 13th, 1851, Mr. Motley is so good as to write further from Labuan.—"Since, by the last opportunity, I wrote you an account of the '*Kassur Baras*,' I have visited Borneo and have obtained some further information on the subject, and as I would not trouble you with a separate letter for such a trifle, I send it through my friend Mr. Lewis Dillwyn. The sample in the box sent, you must observe, is only prized so highly as I then stated when cleaned and picked. Very little would reach the highest value, though it is a very profitable kind to buy, having very little impurity mixed with it. It is bought from the natives by the Chinese merchants in this state, and it requires much judgment to buy it safely and to estimate by the eye the quantity of adulteration. To such an extent is this carried, that a Malay Nacoda of Borneo has the reputation of being able out of one catty of good camphor to manufacture sixteen catties which will pass muster with the inexperienced. When it comes into the hands of the merchants it is carefully washed; first with clean water to float the camphor away from the impurities, then with soap, and lastly with lime-juice and water; the soap destroying and the acid restoring its lustre and transparency. It is then sifted into three sizes, after which every crystal is carefully picked over and scraped if necessary, to clean off every particle of dark matter. These qualities are worth, respectively, about 35, 25, and 20 dollars per catty; the dark-coloured and nearly opake pieces, which are all separated, are slightly pounded and then again sorted to get out all that it is possible to procure, and the residue is worth about 6 dollars. The quantity exported from Borneo is about seven peculs per annum; it comes from Palawaw, the northern part of Borneo Sooloo, but about five-sixths of it from Barram; Singapore also receives large quantities from Acheen and other parts of Sumatra, and a good deal is carried direct to China from Sooloo and Magurdano, and the eastern coast of Borneo. It is consumed chiefly in China, but a good deal is also sent to Cochin-China, Japan, Laos, Cambodia, and Siam, and a small quantity to Burmah. Since I wrote to you I have had another and better opportunity of seeing it *in situ*, though in small quantity, and I think that it is not deposited from the oil, but that it is sublimed and crystallized in the upper part of the cavities, which are only partially filled with oil; this may be an exception however, but it was the case in the only two trees I have seen while yet standing. The other specimens sent in the box were put in to fill up, and tell their own stories so far as I know. Should I have an opportunity of acquiring further information, and should it be worth your while to receive it, it will be a labour of love to me; for, with unfortunately very little knowledge, I have nevertheless an unquenchable love for all branches of natural history."

I have little to add to the early history or discovery of this camphor given by De Vriese. That author (p. 33 of the present volume) states that the first mention of it occurs in the "Eerste Scheepvart der Hollandsche Natie naar Oost-Indië, 1595–7,"—but, as will be seen by the quotation which heads this article, it was evidently known in the time of the great poet and traveller Camoens, who died in 1579 and whose 'Lusiad' was published in 1572.

Our representation of the appearance of the crystals of resin of the natural size, Tab. VIII. fig. 1, is taken from a portion of the block sent by Mr. Motley (the entire piece of wood with crystals in the clefts is 1½ foot long by 10 inches broad); and at fig. 2, a portion slightly magnified:—but it will be observed that these are only intended to exhibit what they appear to the eye of the artist. Samples of crystals were sent for investigation, through the kindness of Dr. Percy, to H. J. Brooke, Esq., who writes to me—"I have lately received from Dr. Percy some crystals and fragments of a yellowish gum or resin, which I examined and measured and then transmitted to Cambridge to Professor Miller; and I now enclose a figure or projection of the crystalline form as it would appear to an observer looking perpendicularly down upon it, if the faces were perfect and symmetrical*. But the crystals are very far from being symmetrically formed, and from this circumstance the true form is not apparent, and it has been ascertained by measurement of the angles."

"The crystals of mellite are modifications of a *square* prism, while those of this new gum are modifications of a *rectangular* prism."

"I think that crystals of a red gum have been found in Brazil wood, but I do not know their form.—Professor Miller remembers having seen the name of *Borneo camphor* in Frankenheim's 'System der Krystalle.'—I think it right to communicate to you all I can relative to this interesting substance." *H. J. B.*

For the description of the genus and species of this tree I have only to refer back to p. 36 *et seq.*: the original paper is accompanied by an excellent figure (though there also *perfect* flowers are wanting), on folio size, and I should hardly have desired to publish one from our own specimens could I have flattered myself that the valuable scientific journal in which De Vriese's paper has appeared had the circulation in our country which its merits deserve. Our fruit, not quite mature, but well preserved in alcohol, exhibits some slight differences from that of De Vriese. We find a nut, rather than a "three-valved capsule;" at least none of the pericarps of our specimen exhibits sutures or lines indicating dehiscence. In the forward state of our fruit we find one perfect large seed and five abortive ovules near its summit, all pendulous. Mr. Bentham, who kindly examined a fruit and compared it with the drawing, would define it thus:—"From an examination of the fruit it would appear to me evident that the ovary was three-celled, with two ovules in each cell collaterally affixed to the central axis and pendulum. As the fruit swells one ovule alone is enlarged so as to occupy the whole of the cavity, the dissepiments detach themselves from the sides, and, without growing, remain with the axis enclosed within the vertical groove of the seed, so as scarcely to be distinguishable from the testa; and the seed, as in many *Ola-*

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* This figure or projection is copied at our Tab. VIII. fig. 3. It was accompanied by the following notes:—"The primary form a right rectangular prism. The actual figure corresponds to the right rhombic prism of Haüy. There are other faces not yet investigated.—Angles between normals to the faces: m m′ 77 46; m r 52 40; m s 42 27; r r′ 44 45; r r″ 56 20: s s′ 102; s s″ 37 28. These are supplements to the angles usually given." ("The figure has been drawn and the angles computed by Professor Miller."—*H. J. Brooke.*)

cineæ, although pendulous from the apex of the central axis, appears to be erect from the base of the cavity, and the five abortive ovules appear to be attached to the side of the seed." All this will be best understood by the

References to the Plates.

Tab. VII. Branch with leaves and scarcely mature fruit:—*nat. size.* Fig. 1, vertical section of a fruit contained in the thickened base of the calyx; 2, transverse section of the top of the fruit, cut through the apex of the perfect seed and near the middle of the five abortive ovules; 3, an abortive ovule removed; 4, seed with abortive ovules attached, removed from the pericarp; 5, seed cut transversely through the plaited cotyledons of the embryo; 6, convolute embryo, removed from the seed; 7, the same laid open, to show the two very unequal cotyledons and the radicle:—*magnified.*

Tab. VIII. Fig. 1, portion of a branch of the *Dryobalanops* with crystals chiefly in a cavity; 2, lesser portion:—*magnified* (not intended to be mathematically correct); 3, diagram of a crystal as described at p. 205 in note.

Begonia phyllomaniaca, *Mart.**

At one of the last meetings of the Royal Bavarian Academy of Sciences at Munich, a very remarkable species of *Begonia* was exhibited by Professor von Martius, having this extraordinary peculiarity, that it produces from the stem, branches, and petioles, innumerable leaflets, which, on being detached and placed on moist ground, produce roots and perfect plants. In order to mark this singular property, the Professor calls the species *B. phyllomaniaca*,—being possessed by *phyllomania.* It stands nearest to *B. papillosa* and *incarnata;* and the following detailed diagnosis embraces its essential peculiarities:—

Begonia phyllomaniaca (in serie "foliis semicordatis vel inæqualiter cordatis"); caulescens, erecta; caule ramisque leviter scabriusculis passim *folia succedanea* parvula innumera promentibus; foliis (ultra 5–6 unc.) oblique dimidiato-cordatis ovato-oblongis acuminatis (præter nervos venasque subtus parce albo-pilosos) glabris crassiusculis duplicato-inæqualiter dentatis piloso-ciliatis, petiolis teretibus scabriusculis passim longe pilosis; stipulis internodia novella superantibus oblonge lanceolatis cuspidatis marcescentibus; panicula ♀ subcorymbosa, ♂ parciore; pedunculo communi et partialibus primariis carunculis filiformibus irregulariter scabris, secundariis glabris roseopurpureis, bracteis ovatis obtusiusculis brevibus (oppositis); stylis longiusculis flavis, stigmatibus aureis; alis capsulæ roseo-purpureæ omnibus inæqualibus rotundato-obtusis, latissimâ mediam latitudine duplo excedente; petalis oblongis; antheris (quas vidi) cassis, *i. e.* polline destitutis.

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* We are unable to name its native country.—Ed.

The development of the leaflets, which sometimes cover the plant to the amount of a thousand, is analogous to that of the scales on the petioles of a Fern. On the margin and apex of these leaflets, which at first are *hair-shaped*, cells are produced, single or united into groupes (3–6), often gland-like, and filled with a yellowish juice. One common cell often envelopes one of these little groupes, and afterwards peels off. The whole process seems to have the greatest analogy with the formation of leaves on the petioles of Ferns (*e. g. Asplenium fecundum* or *Polypodium effusum*).

A List of the PROTEACEÆ *collected in South-western Australia by* MR. JAMES DRUMMOND; *by* DR. and PROFESSOR C. F. MEISNER.

(*Continued from p.* 187.)

II.329.; (1848)IV.287.	Hakea	platysperma, *Hook.!*
(1848) IV. 288.	,,	recurva, *Meisn. MSS.*
	,,	pugioniformis, *Cav. Gunn, n.* 731.
III.273.; V.Suppl.n.17.	,,	Lehmanniana, *Meisn.*
(1848) IV. 290.	,,	rugosa, *R. Br.?*
	,,	epiglottis, *Labill.! Gunn,* 1235! *et?* 729.
	,,	Milligani, *Meisn. MSS. Milligan, n.* 737.
V. 412.	,,	nodosa, *R. Br. Gilbert, sine no.*
V. Suppl. n. 15.	,,	subsulcata, *Meisn.*
II. 331.	,,	flexilis, *R. Br.?*
V. Suppl. n. 13.	,,	leucoptera, *R. Br.?*
V. Suppl. n. 14.	,,	tephrosperma, *R. Br. suppl.?*
II. 329, 330.	,,	obliqua, *R. Br.?*
	,,	lissosperma, *R. Br. Gunn, n.* 356 *et?* 210.

(1848) IV. 289.	Hakea	strumosa, *Meisn. MSS.*
IV. 600.	„	scoparia, *Meisn.*
III. 272; IV. 599; V. 411; Suppl. n. 16.	„	sulcata, *R. Br.*
	„	microcarpa, *R. Br. Gunn, n.* 20 (210?).
I.; IV. 626.	„	trifurcata, *R. Br.* (*H. mixta* et *tricruris*, Lindl.!)
III. 292; IV. 601.	„	erinacea, *Meisn.*
	„	Mitchellii, *Meisn. MSS.* (Mitchell's Exped. 1836, n. 208! *hb. Lindl.*)
(1848) IV. 291.	„	brachyptera, *Meisn. MSS.*
(1848) IV. 292, 297? 602.	„	lisiocarpa, *R. Br. suppl.*
IV. 617.	„	lasiocarpa, *R. Br.! suppl.?*
(1848) IV. 299.	„	tuberculata, *R. Br. suppl.* (= H. heterophylla, *Hook.*)
I.; IV. 615.	„	attenuata, *R. Br.*
II. 335.	„	linearis, *R. Br.*
IV. 614.	„	cristata, *R. Br. suppl.*
(1848) IV. 298.	„	nitida, *R. Br.*
(1848) IV. 295.	„	Baxteri, *R. Br. suppl.?*
(1848) IV. 296.	„	Brownii, *Meisn.* (Gilbert, 118? steril.)
I.; IV. 610.	„	amplexicaulis, *R. Br.* (*H. triformis*, Lindl.!)
	„	glabella, (*R. Br.*) *Meisn. MSS.*
I.	„	α. glabella, *R. Br. suppl.*
I.; IV. 612.	„	β. denticulata, *R. Br. suppl.*
III. 278.	„	prostrata, *R. Br.*
II. 334.	„	ceratophylla, *R. Br.*
I.; IV. 613.	„	undulata, *R. Br.* (*Anadenia hakeoides*, Lindl.!)
III. 277.	„	ambigua, *Meisn.*
III. 279.	„	repanda, *R. Br. suppl.*
III. 280.	„	cucullata, *R. Br. suppl.*
IV. 611.	„	conchifolia, *Hook.*
IV. 300.	„	Victoriæ, *Drumm.*
(1848) IV. 293.	„	crassifolia, *Meisn.*
V. 413.	„	Hookeriana, *Meisn. MSS.*
IV. 606.	„	loranthifolia, *Meisn.*

V. 409.	Hakea obtusa, *Meisn. MSS.*
V. 410.	,, oleifolia, *R. Br.*
(1848) IV. 294; III. 274.	,, eucalyptoides, *Meisn.*
I.; IV. 609.	,, cyclocarpa, *Lindl. !* (Gilbert, sine no.)
II. 333.	,, falcata, *R. Br. suppl.* (Gilbert, sine no.)
IV. 605.	,, Candolleana, *Meisn.*
IV. 603.	,, Leucadendron, *Meisn.*
V. 408.	,, trinervis, *Meisn. MSS.*
I.	,, stenocarpa, *R. Br. suppl.*
IV. 604.	,, marginata, *R. Br.*
I.; II. 332.	,, costata, *Meisn.* (Gilbert, n. 59.)
I.; III. 276.	,, ruscifolia, *Labill.*
IV. 608.	,, myrtoides, *Meisn.*
IV. 607.	,, petiolaris, *Meisn.*
III. 275.; V. Suppl. n. 18.	,, multilineata, *Meisn.*
V. Suppl. n. 7.	,, n. sp. (nil nisi fruct. vidi in Herb. Lem.
III. 261.	Lambertia uniflora, *R. Br. !*
II. 312.	,, rariflora, *Meisn.*
IV. 594.	,, inermis, *R. Br. !* (*L. Drummondii*, Gardn.)
III. 264.	,, ericifolia, *R. Br. ! suppl.*
I.; IV. 595.	,, multiflora, *Lindl. !*
III. 263.	,, echinata, *R. Br. !*
III. 262.	,, ilicifolia, *Hook.*
IV. 616.	Xylomelum occidentale, *R. Br. suppl.*
V. Suppl. n. 7.	,, angustifolium, *Kipp. et Meisn. MSS.*
	Orites Milligani, *Meisn. MSS. Ins. Diemen occid. Mr. Milligan, n.* 739 ! *Herb. Soc. Linn. Lond.*)
	,, revoluta, *R. Br. Gunn, n.* 286.
	,, acicularis, *R. Br. Gunn, n.* 285.
	Telopea truncata, *R. ! Br. Gunn, n.* 175.
II. 338.	Banksia pulchella, *R. Br.*
I.; II. 336, 337; IV. 648, 649.	,, sphærocarpa, *R. Br.*
III. 281.	,, nutans, *R. Br.*
III. 282.	,, Meisneri, *Lehm.*
III. 283.	,, occidentalis, *R. Br.*

I.; IV. 647.	Banksia	littoralis, *R. Br.*
I.	,,	cylindrostachya, *Lindl.!*
	,,	Gunnii, *Meisn. MSS. Gunn, n.* 1233.
	,,	depressa, *R. Br.? β. subintegra*, Meisn. MSS. Gunn, n. 1334.
(1848) IV. 304.	,,	verticillata, *R. Br.*
III. 284.	,,	coccinea, *R. Br.*
III. 385.	,,	marcescens, *R. Br.*
(1848) IV. 301.	,,	Caleyi, *R. Br. suppl.? β. sinuosa*, Meisn. MSS.
(1848) IV. 302.	,,	Lemanniana, *Meisn. MSS.*
III. 286.	,,	attenuata, *R. Br.*
(1848) IV. 303.	,,	Baueri, *R. Br. suppl.*
I.	,,	Menziesii, *R. Br. suppl.*
I.; III. 288.	,,	prionotes, *Lindl.!*
(1848) IV. 305.	,,	Solandri, *R. Br. suppl.*
V. 414.	,,	lævigata, *Meisn. MSS.*
III. 290.	,,	barbigera, *Meisn.*
(1848) IV. 306.	,,	Baxteri, *R. Br.*
III. 289.	,,	prostrata, *R. Br. suppl.*
III. 291.	,,	repens, *Labill.*
III. 287.	,,	dryandroides, *Baxter.*
V. 415.	,,	Brownii, *Baxt.*
I.; IV. 638, 639.	Dryandra	floribunda, *R. Br.*
II. 344.	,,	*β.* cordata, *Meisn.*
II. 339.	,,	præmorsa, *Meisn.*
V. 422.	,,	*β.* elongata, *Meisn. MSS.*
(1848) IV. 307.	,,	quercifolia, *Meisn. MSS.*
III. 292.	,,	cuneata, *R. Br.*
I.	,,	armata, *R. Br.* (*D. favosa*, Lindl.)
III. 296.	,,	Serra, *R. Br.*
IV. 643.	,,	stupposa, *Lindl.!*
V. 420.	,,	obtusa, *R. Br.*
II. 341, et? III. 295.	,,	concinna, *R. Br. suppl.*
I.; II. 340.	,,	carduacea, *Lindl.!*
(1848) IV. 315.	,,	Hewardiana, *Meisn. MSS.*
(1848) IV. 318.	,,	runcinata, *Meisn. MSS.*
II. 343.	,,	foliolata, *R. Br. suppl.*

(1848) IV. 312.	Dryandra	pulchella, *Meisn. MSS.*
(1848) IV. 317.	,,	elegans, *Meisn. MSS.*
III. 293.	,,	formosa, *R. Br. suppl.*
II. 342.	,,	squarrosa, *R. Br. suppl.*
(1848) IV. 309.	,,	mutica, *Meisn. MSS.*
I.; IV. 646.	,,	nobilis, *Lindl.!*
(1848) IV. 310, 311.	,,	plumosa, *R. Br.*
V. 418.	,,	Arctotidis, *R. Br. suppl.*
I.; II. 346.; IV. 640–1–5.	,,	nivea, *R. Br.* (et IV. 313 ex parte.)
IV. 313 (ex parte).	,,	Brownii, *Meisn.*
I.; IV. 642.	,,	Fraseri, *R. Br. suppl.*
(1848) IV. 308.	,,	cirsioides, *Meisn. MSS.*
(1848) IV. 314.	,,	horrida, *Meisn. MSS.*
II. 345.	,,	carlinoides, *Meisn.*
V. Suppl. n. 19.	,,	speciosa, *Meisn. MSS.*
III. 297–8; (1848) IV. 316.	,,	cryptocephala, *Meisn.*
III. 294.; V. 417.	,,	tenuifolia, *R. Br.*
(1848) IV. 313.	,,	comosa, *Meisn. MSS.*
I.	,,	proteoides, *Lindl.*
I.; IV. 644.	,,	bipinnatifida, *R. Br. suppl.*
III. 301.	,,	Preissii, *Meisn.*
IV. 320.	,,	nervosa, *R. Br.*
III. 299; V. 418? 419?	,,	Drummondii, *Meisn.*
(1848) IV. 319.	,,	calophylla, *R. Br. suppl.*
III. 300.	,,	β. acaulis, *Meisn. MSS.*
V. 423.	,,	pteridifolia, *R. Br.* β. blechnifolia.
I.	,,	pteridifolia, *R. Br.*
(1848) IV. 321.	Hemiclidia	Baxteri, *R. Br. suppl.*

The above list is drawn up chiefly from the collections of R. J. Shuttleworth, Esq., who, as one of the earliest subscribers to Drummond's plants, has received one of the completest sets. In a few instances only the plants of this set were found to bear different numbers from the same species in Dr. Lemann's set, which I carefully compared in 1850. I am uncertain whether my denomination of the several collections is quite correct. What I have marked Collection I. was received about 1842 or 1843, and had no numbers to the specimens. In 1844 we received Collection II., containing Nos. from 300 to

400; in 1845–46, Collection III., with Nos. 250–300; in 1848, Collection IV., Nos. 250–300 and 500–700. In 1848 *two* sets arrived, the former of which belongs perhaps to the Collection III.; in 1850 Collection V., Nos. 394–423. This is the last series in Mr. Shuttleworth's Collection; but Dr. Lemann had, in 1850, a "Supplement to Collection V.," and Mr. Kippist informs me of still another series received about the end of 1850, which I have not seen. *Meisn.*

Abstract of a Journal kept during the voyage of H.M.S. Herald;

by BERTHOLD SEEMANN.

(*Continued from p.* 92.)

The passage from India to the Cape of Good Hope had been so short that the mind still retained a lively impression of the former. What a contrast was thus produced! Instead of the dense jungle there appeared a ridge of mountains but thinly covered with verdure; instead of the large foliage of the tropics, low, hard-leaved bushes; instead of the noble timber, no trees except those taken by man under his particular care; and instead of the elegant festoons of airy Rattans, the leafless Vrouwenhaar (*Cassyta filiformis*, Linn.), which, as if to humble the pride of that tribe from which poets are wont to select their wreath, hangs slovenly over the branches of the *Rhus glabra*. Nevertheless, to a European the Cape flora presents a most pleasing aspect. He is no longer perplexed, as in the forests of equinoctial America or Asia, by the curious habits and strange foliage of the vegetation, but meets at every step forms which have for centuries, not only been cultivated in botanic gardens, but have become naturalized in every cottage of his native soil; the Heaths, the Ice-plants, the Geraniums, the Callas, and many others are welcome sights, recalling to mind many a happy scene; and even the botanist, if on one hand he must regret that he fails to discover additional genera and species, on the other, cannot but rejoice that his favourite science has already made such progress as to render so remote a portion of the globe, in aspect at least, familiar.

The neighbourhood of Simon's Town consists of a ridge of rugged mountains which are chiefly composed of sandstone, and present, especially during the dry season, the time of our visit, a barren and uninviting appearance. Like many similar localities, however, it is very productive, and, on account of its climate, by far richer than the vicinity of Cape Town. *Proteaceæ* are particularly abundant. The *Protea cynaroides*, Linn., may be seen in the greatest perfection, producing heads frequently more than eight inches in diameter. It is, however, less frequent than its congener, the *Protea grandiflora*, Thunb., which indeed is so common that it imparts a bluish hue to some places, and thus forms a peculiar feature in the landscape. The colonists call it Wagenboom, and employ its wood to make felloes, a purpose for which, on account of its toughness, it is admirably adapted. The Wagenboom is from eight to fourteen feet high, and supplies, like several other *Proteaceæ*, the principal fuel of Simon's Town. We can hardly reconcile ourselves with the idea that any one should be so inconsiderate as to cut down plants which we esteem so highly, and on whose structure and cultivation so many learned treatises have been written. I must confess that when witnessing the proceeding for the first time my feelings were almost akin to those of the soldier in a certain comedy, who, on entering France, discovers to his surprise that even the children speak French, a language which hitherto he had considered merely as an accomplishment of adults.

I was much struck with the *Myrica cordifolia*, Linn., which covers whole tracts of the downs, and appears at first sight to be about two or three feet high; on a closer inspection, however, it becomes evident that what seems to be little bushes are only the branches of subterranean trees! I succeeded in freeing several from the sand,—not a very difficult operation,—and found regular stems creeping a few inches below the surface, and attaining, in some instances, as much as sixty feet in length. The plant performs, therefore, the same office at the Cape as several *Carices* in Northern Europe—that of keeping down the loose shifting sand. Another plant, which both man and nature have applied to the same purpose, is the Paarde Vygen (*Mesembryanthemum edule*, Linn.). On the road between Simon's Town and Wynberg whole acres are planted with it. The vernacular name of the latter, I may add, has occasionally been confounded with that of an allied species, the *M. acinaciforme*, Linn. The plant called Hottentots' Vygen or Paarde Vygen (Hottentots' Fig or Horse-fig) is the *M. edule*, Linn., while that termed Zyre Vygen (Sour Fig) is the *M. acinaciforme*, Linn., and not *vice versâ*, as some authors have it.

The ravines proved at this season the most profitable localities, abounding in *Lobeliaceæ*, *Epilobium villosum*, Thunb., a supposed variety of *E. hirsutum*, Linn., *Gomphocarpus fruticosus*, R. Br., *Psoralia pinnata*, Linn., *P. aphylla*, Linn., *Richardia Æthiopica*, Kunth, Ferns, *Briza maxima*, Linn., *Nerine Sarniensis*, *Brunias*, *Lycopodia*, *Phylicas*, *Jungermannias*, and the Kweek-grass (*Cynodon Dactylon*, Pers.). The latter forms an excellent turf, and seems to stand a remarkable degree of drought without changing its natural colour. The *Richardia Æthiopica* is called *Varkensbladen* (Pigs'-leaf). The colonists tell an anecdote of it which shows what a mere name may sometimes do. A lady of the Cape, who visited Holland, was invited to see a most beautiful plant from her native country. She was conducted to a greenhouse, and the proprietor was just on the point of delivering an eloquent panegyric when the visitor exclaimed, "Why, these are nothing but pig-leaves!" The Dutchman was quite shocked that any one should have such bad taste as to apply to so fine a production such an unpoetical name. Yet it is a question which of the two, *Richardia Æthiopica* or Varkensbladen, is the most expressive; the one indicates the native country, the other denotes the use of the plant. Swine are very fond of the leaves of this as of several tropical American *Aroideæ*. Why a tribe of plants which, on account of its acridity, is rejected as fodder by all other animals should be preferred by pigs, is a fact that zoologists will have yet to explain.

On the morning of the 10th of March I took a place in the omnibus, and passing through a sandy, dusty country, and the villages of Kalkbay, Wynberg, and Drikoops, arrived after about three hours' ride at Cape Town. On inquiry I succeeded in finding the residence of my friend Mr. C. Zeyher, who was occupying a house which had formerly been inhabited by another botanist of some reputation, Dr. L. Krauss. Mr. Zeyher's neighbour, also, Mr. Rheede van Outhoorn, was a gentleman of interest to me, he being a descendant of the celebrated author of the 'Hortus Malabaricus;' and I may mention that on the following day I was introduced to Mr. Van Reenen, a nephew of Persoon. I became subsequently acquainted with Dr. C. F. Ecklon, Mr. Zeyher's former partner, and Dr. L. Pappe, the author of the 'Floræ Capensis Medicæ Prodromus.' Dr. Pappe intends, I understand, to follow up his late work by an enumeration of the economic plants of the South African Flora. In executing this task he encounters, however, many difficulties;—the want of assistance on the part of those from whom he had reason to expect it, the retrograding movements of the Botanic Garden, and various other obstacles; but it is to be hoped that these impediments will not induce Dr. Pappe to abandon his design. At a time when the arts have arrived at such a state of perfection, and are ready to seize upon any new substance presented to them, works on economic botany cannot be valued too highly. The least hint on the part of a scientific explorer may lead to results which even the most sanguine could not have anticipated.

During my stay at Cape Town I paid several visits to the Botanic Garden. This institution occupies a space of ground formerly known as the "Government Garden." Considering that it was only established a few years ago, and possesses limited pecuniary means, it has already made some progress, containing a good many plants, two little hothouses, and a library. It is now, however, retrograding, chiefly through the mismanagement of the Commissioners, a body of men who, with a few exceptions, seem to be quite incapable of exercising the supreme direction, and who, by a series of measures, have brought not only ridicule upon themselves, but the whole institution. Those who could fully understand the nature and object of a Botanic Garden were desirous that their power should be restricted, like that of the Commissioners of Woods and Forests in England, to the mere financial matters, and a general control over the whole; and that Mr. Zeyher should be charged with the chief direction. That such would have been by far the wisest plan, and that no one was better qualified to fill the post than he who has devoted twenty-eight years of his life to the Flora of Southern Africa, requires no demonstration. But although Mr. Zeyher was attached, until lately, as botanist to the establishment, yet he was so situated that he could not attempt any alteration or improvement without meeting an ill-timed opposition both from the head-gardener and the commissioners. At last, to crown all their blunders, the majority of the latter body passed a resolution that the garden could do without a botanist. Dr. Pappe, one of the board, was so indignant at this measure that he entered a protest, and instantly severed all ties with the institution. The Garden has thus lost two of its brightest ornaments; and as the number of subscribers is rapidly decreasing, and the want of funds is every day more experienced, it is evident that, unless the Government puts a stop to the proceedings by appointing a scientific person, and vesting in him the chief direction, this establishment, which, if conducted properly, might have been productive of much good both to the colony and botany in general, must soon fall to the ground, or at least fail to accomplish the object for which it was originally designed.

On Thursday, March 13th, Messrs. Zeyher, Baur, and Juritz and myself ascended Table Mountain. Dr. Ecklon would have joined the party, but being far advanced in years, and debilitated by a prolonged residence in a hot country, he feared that he should not be able to reach the top. We started at dawn, and took the usual road, up the kloof. Never have I enjoyed an excursion so much. The day was beautifully clear, the company delightful, and Mr. Zeyher made so many interesting remarks on the different plants, that time seemed to fly with more than its usual speed. At an elevation of 1000 feet we found a grove of the *Leucadendron argenteum*, R. Br., which produces its branches in whorls, and with the regularity of a pine. It is the only indigenous tree I saw in the Cape Town district; for the *Virgilia Capensis*, Lam., which is frequent, has been brought, according to Mr. Zeyher, from some distant part of the colony, and the others from Europe, Asia, America, Australia,—in fine, from every part of the globe. A strange mixture, indeed, is thus produced. Here stands a tall *Eucalyptus* near the *Populus alba*, there the *Nicotiana glauca* in company with the Cypress of the Levant and the *Casuarina* of the Indian Archipelago; all apparently growing as vigorously as in their native soil.

It was nearly ten o'clock when we reached the summit. Most places generally fall short of the expectations formed of them, but never was I more disappointed than with Table Mountain. During my travels I have visited several mountains far more deserving of renown than this; the Montana, or Galera de Chorcha, in Veraguas is certainly more regular, larger, and bolder in outline. The view of the town, the bay, and the island, however, and the surrounding flora, made up in some measure for the disappointment. Having taken our breakfast near a little fountain, we commenced ransacking the platform. The *Disa ferruginea*, Swartz, was plentiful, but of the *Herschelia cœlestis*, R. Br., one of the rarest plants of the country, only a few specimens could be found, as some previous visitors, probably attracted by its lovely colour, had gathered a whole bunch, which they had left behind.

On descending a few hundred feet we came to a valley. There the *Disa grandiflora*, Linn., probably the finest of all terrestrial *Orchideæ*, grew in great perfection on the sides of rivulets, places which during the wet season are entirely under water. We collected a sufficient number of specimens, and continuing our ramble, met with the *Erica lutea*, Linn., *E. cornuta*, Roxb., *E. glutinosa*, Berg., *Harveya tubata*, Hook., a species of *Drosera*, and many other interesting plants. Towards dusk our attention was attracted by a number of baboons, which were jumping with great dexterity from rock to rock, and chattering so loudly that their voice could be heard at a great distance. We descended on the opposite side to that we had come, in order to make a semicircuit, and arrived at nine o'clock in Cape Town, tired, but highly pleased with our excursion.

(*To be continued.*)

BOTANICAL INFORMATION.

The Linnean Herbarium.

[The following general remarks are abridged from "*Anteckningar vid de Skandinaviske Växterna in Linnés Herbarium*, by C. Hartmann." (Notes on the Scandinavian plants in the Herbarium of Linneus.) Transactions of the Royal Swedish Academy of Sciences for 1849 (published 1851), p. 147.]

The inconvenience of not possessing hitherto any details of the Linnean collections has been generally felt and acknowledged by the botanical world. Although a botanical author's views may be far better learnt from his writings than from his herbarium, which is not always, and since Linneus's time but rarely, arranged in conformity with the former; yet it cannot be denied, that in all cases of doubt, and in the absence of satisfactory evidence as to the plant which an author had before him, or has reason for considering it in one light in preference to another, it is his herbarium which must come to our aid. This is precisely the case in respect to the writings and herbarium of

Linneus; especially as his peculiar style and clashing expressions on different occasions and in different editions, rendered it often a matter of doubt and conjecture what specific plant he actually had before him or meant to name. The embarrassment arising from this source would be considerable even if the science of botany had remained stationary; but it is much more felt in our times, when the progress which is constantly made renders it peculiarly important to know with certainty the plants described by the older botanists, and especially Linneus; for instance, when a species requires to be broken up and it is necessary that we should know the typical form fixed by that great authority; not to speak of the polemical disputes which have arisen on such occasions, attended with loss of time and temper, and retarding the progress of knowledge, multiplying our difficulties, and dealing with the science, not as an aim, but as a means only.

All these disadvantages have more or less been felt from our want of a close or intimate acquaintance with the Linnean collections; and not only in foreign countries, but in this, his own native land, whose flora, in consequence, still numbers many unsettled species. If Sweden had not, unfortunately for herself, lost those treasures, their close study would have supplied most of what was wanting in this respect; and it was to remedy this state of things, that I applied for and obtained last year the means of going to England, on purpose to examine the herbarium in question; and I now proceed to lay before the public the results of my journey. Long ago my late lamented father had expressed an anxious wish that such an investigation should take place; to him would I therefore ascribe the enterprise—while all that is defective in its execution must fall on my own shoulders. I am conscious that a botanist of his skill and experience would have performed the duty far better than I was able; and all I did has resulted in the following statement of the actual extent and form of the collection, and, as far as possible, accurate account of that part of it relating to the northern flora.

The Linnean collections and library of books and manuscripts, which were purchased in Sweden and brought to England by the late Sir J. E. Smith, have since his death come into the possession of the Linnean Society of London, where they are preserved in their house in Soho Square; the botanical and zoological portions being placed respectively with the corresponding portions of the Society's other collections, and most of the books in the general library. Only a small number of the books, consisting entirely of his own works and enriched by his manuscript annotations (not including, however, his academical disputations), together with all the Linnean manuscripts, are kept separately from the rest, and placed in the same room which contains his herbarium, together with Sir J. E. Smith's and the grand herbarium presented by the East India Company*. Externally the Linnean Herbarium is the least pretending among these collections. It still continues in the same three plain, green-painted presses, in which our great master had originally placed the specimens as they poured in from his grateful disciples from all parts of the world. They are five to six ells (Swed.) in height, exclusive of their stand†; each having two vertical rows or partitions. The only alteration that has been made, was peremptorily called for by the change of locality from Upsala to London. In order to protect the specimens from soot and dust, everything that could be thought of has been done, and with a degree of solicitude which, while it evinces a just estimate of their great value, has served to keep them in a perfect state of preservation; and this is the only point on which the herbarium differs from the state in which it was in Linneus's time. The doors of the presses have been made to fit more tightly by means of list, and the entire herbarium has been divided into about 700 packets, not above half an inch in diameter, each enclosed in a wrapper made of brown paper lined with cloth, and easily opened so as to admit of the specimens being taken out without injury. Near the cover of each wrapper is glued a label with the name and number of the genus or genera it contains written on it; and two, sometimes three, such packets are bound together with green tape into one, of about an inch thick. On opening the presses, these packets are seen arranged in two upright rows, and here and there separated from each other by thin fixed boards. When it happens that a genus is numerous it is subdivided into several packets. Thus protected, the herbarium remains undisturbed in its old arrangement according to the sexual system in the 'Species Plantarum,' with the exception of an occasional genus, for which there was not sufficient space in its own class. The specimens are attached to half-sheets of white paper by means of narrow slips of paper, the bottom of the stem being often ornamented by artificial devices representing a flower-pot, or the like. All the species are placed within one, or if numerous two or more sheets of paper; on which is marked, in large letters and in Linneus's own handwriting, at the left corner below, the name of the genus and its number, pointing out its place, the number rising to between 1200 and 1300. The half-sheets have in front, on one side, the name of the species, genus, class and order, with a reference to the Spec. Plantar., in a large hand, differing from the usual writing of Linneus; but below the specimen, about the middle of the sheet, the specific name is again repeated in Linneus's usual small hand, mostly with the generic name also, and the number of the species in the first edition of Spec. Plantar. This number, written in pencil, designates the place of the species in the herbarium, or with ink, denoting the corresponding number in the work quoted, in which again, that is in Linneus's own copy, it is underlined, to indicate that the plant exists in the herbarium. It often happens that a species has a number only, without any name, in which case Linneus has placed it near the specimen to which the specific name has been affixed; and in case neither name nor number are added, the plant is temporarily placed nearest the species to which it is most allied, for the sake of comparison or future determination. Frequently one or more papers bearing specimens of the same species, are stuck by a pin to the named species. Sometimes a number of undetermined specimens are collected together at the end of their respective genera; and where these latter have not been ascertained, they are put up in separate thick bundles without any sort of notice, except of the locality in very few instances, or with an occasional attempt on the part of Sir James to name the genus.

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* Dr. Hartmann explains in a note, that a very erroneous idea is current in Sweden, to the effect that the Banksian collections are likewise in the Linnean Society's possession. The real state of the case is so well known in this country that it is unnecessary to give the note *in extenso*.—Ed.

† The exact height is 7 feet 6 inches; the stand, which they have in common with Sir J. E. Smith's herbarium, is 7 inches high.—Ed.

(To be continued.)

Vancouver's Island.

A survey of the "Victoria district," and the settled part of the "Puget Sound district," having been recently made by the Hudson's

Bay Company, we are permitted to publish the following notes on the *Vegetation;* premising, however, that the surveyor is no botanist, that in naming the plants entire dependence cannot be placed on them, and that by the comparison of the flora with that of Britain it is merely intended to speak of the general aspect, such as might be expected in somewhat similar latitudes in the northern hemisphere, both of these two countries surrounded by sea.

"Speaking generally," the writer says, "as might be expected from the relative latitudes, the flora here and in the British Islands is very similar. In timber, the *Oak*, which is abundant here, is merely the smooth-leaved variety of the English Oak" (more probably the *Quercus Garryana*, Dougl., of which some of our specimens are from Puget Sound). "I may perhaps mention that where the forest appears the most dense, pretty little prairies are constantly met with:—one generally passes through a thick belt of Pines into a rich lawn or glade where Oaks are scattered with park-like regularity, and the deer move quietly away on your approach.—A Cypress-tree, *Cupressus thyoides*"—(more likely *Thuja gigantea*, Nutt., and Hook. Fl. Bor. Am. vol. ii. p. 165, *Th. plicata*, Lamb.), "called by the Americans *Cedar*, is also plentiful here. It grows to a large size, two to twelve feet in diameter, and is particularly valuable for building purposes. It supplies the shingles with which houses are roofed.

"Of the *Pines* there are three kinds in these districts. Of these, No. 1, the *Pinus* (Abies) *Douglasii*, Sabine (Hook. Fl. Bor. Am. vol. ii. p. 162. t. 183), is by far the most abundant. The timber is red, and very valuable in furnishing spars, as well as for ship-building purposes generally. The properties of the *Douglas Pine* are very similar to those of *P. sylvestris* of Memel or Dantzig. Compared with the North American timber usually sold as '*Red Pine*' in the English market, and used almost indiscriminately with Memel or Scotch Fir, the *Douglas Pine* will, I think, be found to possess advantages which the other has not; for example, it does not taper so much, is less knotty, and logs that have been many years in the forest indicate equal durability. I might add that, growing, it is scarcely distinguishable from *Pinus religiosa*" (*P. religiosa* is a Mexican species:—*P. resinosa*, Sol., and Hook. Fl. Bor. Am. vol. ii. p. 161, is no doubt intended, the *Red* Pine of the United States and Canada, and also found in Oregon by Douglas), "so highly spoken of by Americans, almost exclusively used in the buildings of Union Town, Trinidad, and other towns on the Oregon coast, and largely imported into the San Francisco market. The timber of this tree (*P. resinosa*), though larger than that of the *Douglas Pine*, is not nearly so tough. The largest-sized *Douglas Pine* as yet introduced here, measured thirty-six feet in circumference.

"No. 2. *Pinus* (Abies) *grandis* (Hook. Fl. Bor. Am. vol. ii. p. 163).—A white timber, in its growth and properties very closely resembling our Silver Fir. . . . .

"No. 3. *Pinus mitis*" (there is a *Pinus mitis*, Mich., *P. variabilis*, Pursh, in the United States, but it has not been recorded as found in North-west America).—"A red wood, finer in the grain than the Scotch Fir, which the living tree a good deal resembles.

"Varieties of Maples and other trees are common also. The valuable Hemp, *Urtica cannabina* (probably *U. Canadensis*, or some yet undescribed species), grows wild in abundance in the woods. Good Grasses, and suited to the soil, are much wanted. Wild Peas (probably *Lathyrus pisiformis* or *L. decaphyllus*, or both) are constantly met with, perhaps indicating that Vetches and other so-called artificial Grasses would thrive remarkably well here."

PLANTS OF NATAL.

Our botanical friends will be glad to be informed, that a zealous naturalist and able collector, Mr. R. W. Plant, sailed a year and a half ago for Port Natal, with a view to make researches in the interior of that little-known country, and chiefly in relation to botany. He had the intention of visiting the Zooloo territory and the mountainous districts to the westward, and also the various settlements on the east coast of Africa, and the Comoro Islands. Our valued friend Wm. Wilson Saunders, Esq., has kindly supplied him with a map, and has indicated to him the routes likely to be the most productive in plants. Mr. Bentham has undertaken to receive and name and distribute the collections after their arrival; and we need not tell our readers how much this will add to the value of the specimens.

A small collection has arrived and is placed in Mr. Bentham's hands; but whether there is a sufficient quantity to distribute at once, or whether it may be desirable to wait for a further consignment, we have yet to learn. Botanists who desire to subscribe may address their letters either to W. Wilson Saunders, Esq., East Hill, Wandsworth, or to G. Bentham, Esq., Pontrilas, Hereford.

De Candolle's Bust.

We are reminded by what we said of Rembert Dodoëns' bust (1851, p. 752), that the grateful Genevese have likewise placed a bronze bust of the above celebrated botanist in the Botanic Garden at Geneva. Unfortunately it is not like; which causes Professor Parlatore to exclaim (*Viaggio alla Catena del Monte Bianco*, p. 166), "Duolmi il dover dire che quel busto non ricorda punto la cara effigie di quel celebre naturalista!"—*Bot. Zeitung, January*, 1852, *p.* 103.

NOTICES OF BOOKS.

Watson, Hewett Cottrell: Cybele Britannica; *or, British Plants and their Geographical Relations.* Vol. III. Distribution of Species (*concluded*). 8 Fluviales,—88 Pteridioides (*with additions to the former volumes*). London, 1852. 8vo.

We noticed the first volume of the 'Cybele' in the 'London Journal of Botany' for 1847, p. 260, and we gave a table of contents, and an example of the distribution of one of the species (*Elatine hexandra*) in illustration of the nature of the work. Vol. II. appeared in 1849; and the laborious and talented anthor has now issued a third and concluding volume, as far the distribution of species is concerned. A fourth volume is in contemplation, in which it is proposed "to treat the distribution of plants under a different aspect; that is to say, not each one singly and apart, but the whole taken in connection, in order that their individual peculiarities of distribution may appear in comparison and contrast, as reciprocal illustrations of each other." The present volume is accompanied by a Map of Britain, divided into 18 provinces, 33 subprovinces, and 112 counties and vice-counties. Mr. Watson turns critic, *more suo*, in his "Introductory Explanations," and foretells that "Hooker's 'British Flora' will soon fall into disuse, like the floras of Hudson, of Withering, of Smith:" and while he takes Mr. Babington's 'British Manual' under his fostering wing, he does not fail to blame that gentleman severely "for his eagerly adopting the spurious and doubtful species of other botanists, but also for adding to their number himself, together with a proneness to adopt and make unrequired changes in nomenclature;" notwithstanding that Mr. Watson "resisted several of these ill-judged innovations both by ridicule and by reason," and, he flatters himself, "not wholly ineffectually:"—so that "the author of the 'Cybele' therefore felt it would be no wise course to tie himself to the views and nomenclature of the author of the 'Manual,' which then threatened to be so capricious and changeable."

"True," writes Mr. Watson, "Hooker's 'British Flora' has recently been re-edited in its sixth edition by a botanist of merited reputation, who has bestowed considerable pains upon it, and has doubtless made many emendations in it. But the attention of Professor Arnott, equally with that of Sir William Hooker, had been long given to exotic botany, and *almost entirely withdrawn from British and even European species.* And thus he too came to the task unprepared with the special kind of knowledge required for its proper performance."—As an old friend and not very distant neighbour, the writer of this is willing to let all pass that Mr. Watson may have said on this or on former occasions unfavourable of himself; but he cannot admit that his able coadjutor in the editing of the 6th edition of 'British Flora,' Professor Arnott, has "almost entirely withdrawn from British and even European species of plants."—We have indeed yet to learn that a knowledge of exotic botany (unless unduly absorbed by it) disqualifies a man from being a good British botanist;—but this we will say without fear of contradiction, that no one has ever come to a task of the kind more thoroughly prepared by a theoretical and practical knowledge of *British* and *European* plants, a knowledge gained in the field as well as in the closet, during a period of thirty years, to which may be added the information obtained by a ten years' course of instruction to his students,—than Professor Arnott.

Characters of some South-west Australian COMPOSITÆ, *principally of the Subtribe* GNAPHALIEÆ; *by* DR. ASA GRAY.

SCYPHOCORONIS, nov. gen.

Capitulum 8–12-florum, homogamum; floribus omnibus hermaphroditis tubulosis, centrali sæpe sterili. *Involucrum* uniseriale, 5-phyllum; squamis linearibus, herbaceis, carinato-concavis, flores æquantibus. *Receptaculum* parvum, epaleaceum. *Corollæ* tubo gracili, limbo cyathiformi, 5-lobo. *Antheræ* breves, basi breviter caudatæ. *Styli* rami apice subdilatati, extus hirtelli, acutiusculi. *Achenia* linearia, cylindrica, glabriuscula, callo basilari maximo inserta, pappo cyathiformi continuo persistente coriaceo integriusculo coronata.—Herba pusilla annua, viscoso-pubescens; caulibus sesquiuncialibus, diffusis, apice monocephalis; foliis subspathulato-linearibus, oppositis et alternis. Corolla flavida, tubo cum margine repando pappi coronæ, glandulis pedicellatis consperso.

S. *viscosa*, A. Gr. in Hook. Ic. Plant. tab. 854.

South-western Australia, *Drummond*.—From the style, this little plant should perhaps be referred to the *Asteroideæ;* but none of the *Tarchonantheæ* are homogamous, and the *Buphthalmeæ* have a paleaceous receptacle. It is evidently related to the following, viz., *Anthocerastes*, which has a nearly similar style, and the aspect of some small *Gnaphalieæ* or *Tarchonantheæ*.

ANTHOCERASTES, nov. gen.

Capitulum 5-florum, homogamum. *Involucrum* oblongum, e squamis 5 membranaceis ultra medium coalitis gamophyllum, extus lanuginosum. *Receptaculum* parvum, epaleaceum. *Flores* hermaphroditi, centrali sæpe infertili. *Ovarium* gracile, sensim rostrato-productum in tubum filiformem inarticulatum corollæ apice cyathiformis 5-dentatæ. *Antheræ* basi sagittatæ, ecaudatæ. *Styli* rami filiformes, complanati, apice breviter puberuli acutiusculi. *Achenium* subulato-corniforme e callo basilari maximo, glabrum, rostratum, rostro lanigero, cum tubo corollæ continuo persistente! ex involucro exserto, longe recurvato. *Pappus* nullus.—Herba minima, annua, exscapa, capitulo inter folia radicalia subulata basi dilatata subsessili, nunc flagellis filiformibus 1–2-cephalis prolifera; foliis flagellorum alternis vel sub capitulo oppositis.

A. *Drummondii.*

Swan River, *Drummond.*—Plant two or three lines high, or the radical leaves longer, often proliferous with one or two runners which are an inch long. Leaves glabrate, minutely hairy and glandular, those under the head opposite, with their dilated bases subconnate, those of the flagelliform branches alternate. Head very woolly, the remarkable persistent recurved corollas much exserted from its summit. There is no articulation between this tube of the corolla and the beak of the singular corniform achenium! The anthers are sagittate, with their lobes barely apiculate, but not caudate. The style has rather the character of the *Asteroideæ*, to which perhaps this genus and the preceding should be referred.

ACTINOPAPPUS, *Hook. fil. ined.*

Capitulum pauci-pluriflorum homogamum, floribus omnibus tubulosis, hermaphroditis, vel 1–2 centralibus abortu sterilibus. *Involucrum* laxum, 1–2-seriale; squamis 5–6 latissime ovatis hyalinis, costa viridula carnosula, inappendiculatis, floribus æquilongis. *Receptaculum* parvum, epaleaceum, papillosum. *Corolla* parva, cylindrica, apice 4-dentata. *Antheræ* bicaudatæ. *Styli* rami apice truncati. *Achenia* obconica, inclinata vel curvata, valde obliqua, grosse glandulosa, humectate mucosa, areola laterali latissima; sterilia inania. *Pappus* paleaceus, conspicuus; paleis 7–12, chartaceis, late obovatis, integerrimis, obtusissimis, exaristatis, corollam persistentem (viridulam) includentibus.—Herbæ annuæ pusillæ, glabratæ; caulibus tenuibus; foliis linearibus oppositis carnosulis; capitulis parvis terminalibus solitariis vel glomeratis, basi parce arenosis, singulis inter folia 4 bracteantia sessilibus. Pappi paleæ radiantes, ratione capituli maximæ.—"Genus *Quinetiæ* affine." (Char. ex MSS. Hook. fil. paululum amplificatus.)

1. A. *perpusillus* (Hook. fil. ined.): caule simplici semipollicari erecto; capitulis 3–7-floris; pappi paleis 7–8 tenuiter mucronato-apiculatis.

George Town, Tasmania, *Gunn.*

2. A. *Drummondii* (n. sp.): caulibus ramosis bipollicaribus diffusis; capitulis 10–20-floris; pappi 8–12 paleis latissimis vix aut ne vix apiculatis.

Swan River, *Drummond.*—The one or two sterile central flowers, in

both species, have an inane ovary, and the papus much shorter than the corolla. Receptacle convex.

PODOTHECA *pygmæa* (n. sp.): foliis linearibus; capitulis caule æquilongis (semipollicaribus); involucri squamis exterioribus ovatis foliaceis, omnibus obtusis; pappi paleis 5, basi nudis distinctis.

Swan River, *Drummond.*—Whole plant scarcely above an inch high.

DIMORPHOLEPIS, nov. gen.

Capitulum multiflorum, heterogamum; floribus omnibus tubulosis, paucis fœmineis marginalibus corolla tenuiore æqualiter 3-dentata, cæteris hermaphroditis; corolla 4-dentata. *Receptaculum* planum, nudum. *Involucrum* hemisphæricum, imbricatum, disco æquilongum, biforme; exterius pauciseriale, e squamis scariosis ovato-lanceolatis marginibus dense setigero-fimbriatis, intimis breviter stipitatis; interius uniseriale, e squamis incrassato-cartilagineis lanceolatis sessilibus, marginibus subciliatis apice tenui fimbriato-laceris. *Antheræ* basi bicaudatæ. *Styli* rami apice truncati. *Achenia* anguste oblonga, erostria, subcompressa, glabra. *Pappus* fl. fœm. minutus, setuloso-coroniformis, fl. hermaph. e paleis 3 (raro 1–2) setiformibus barbellato-fimbriatis summo apice acutissimis nudis corollam æquantibus.—Herba pumila annua, multicaulis, tenuiter villosa, mox glabrata; caulibus 1–3-uncialibus, mono-oligocephalis, nunc prolifero-ramosis; foliis linearibus, alternis, summis capitulum sessile bracteantibus. Involucri exterioris squamæ albidæ; flores flavidi.

D. *Australis*, A. Gr. in Hook. Ic. Plant. tab. 856.

South-western Australia, *Drummond.*—Also in the interior of Eastern Australia, at Bathurst Plains, *Fraser;* and Nangers, *Capt. M'Arthur.*—*Stem* erect or depressed-spreading. *Heads* 2–3 lines long. *Corolla* slender, the ampliate summit minutely four-toothed in the perfect, and three-toothed in the female flowers; in the latter more slender, but otherwise similar, and destitute of stamens. *Achenia* somewhat narrowed at the apex, four-nerved, the slender nerves minutely serrulate, scabrous under a lens, otherwise glabrous, or nearly so. Drummond's specimen is much condensed, the stems barely an inch high. That from Captain M'Arthur is erect, proliferously branched, and about three inches high, with a foliose-bracteate head, sessile in each fork of the stem.—The genus is evidently allied to *Panætia*, Cass., and *Chrysodiscus*, Steetz, but different from both in the two kinds of involucre and pappus; the latter in the hermaphrodite flowers consists of narrow paleæ rather than setæ.

GNAPHALODES, nov. gen.

Capitulum multiflorum homogamum, floribus omnibus tubulosis hermaphroditis. *Receptaculum* conicum nudum. *Involucrum* cylindraceum pluriseriale; squamis scariosis oblongis seu obovatis dorso lanigeris, appendice brevi concava terminatis, disco longioribus. *Corollæ* graciles, apice brevissime 5-dentatæ. *Antheræ* bicaudatæ. *Styli* rami apice truncati. *Achenia* obovata, erostria, glabra. *Pappus* 5-paleaceus, corolla sublongior; paleis rigidis anguste linearibus basi subcoalitis pectinato-ciliatis apice attenuato-barbellatis vel penicillatis.—Herbæ annuæ depressæ, lanosæ, Micropi seu Gnaphalii uliginosi facie (unde nomen Tournefortianum Micropi, *Linn.*, huc transtuli); foliis alternis spathulatis, summis confertis capitula sessilia basi lanatissima quasi involucrantibus. *Involucrum* albidum, apice luteolum.

1. G. *uliginosum* (n. sp.): caulibus diffusis; foliis summis obovatis circa capitula sæpe solitaria densissime confertis eaque vix superantibus; involucri squamis apice lato-ovato seu deltoideo superatis; pappi paleis apice subæqualiter barbellatis.

Swan River, *Drummond.*—Stems one or two inches long, branched, depressed or diffuse; the larger specimens of the plant are not unlike *Gnaphalium uliginosum* in aspect.

2. G. *condensatum* (n. sp.): subacaule; capitulis glomeratis foliis elongato-spathulatis multo brevioribus; involucri squamis exterioribus appendice angusta acutissima, interioribus appendice oblonga obtusa, superatis; pappi paleis in setam brevem inferne nudam apice penicillato-plumosam subito productis!

Swan River, *Drummond.*—Heads larger than in the preceding, three or four lines long, several together in a dense glomerule which is sessile in the cluster of apparently radical leaves. *Pappus* 1½–2 lines long. *Achenia* in both species very short, glabrous, covered with a whitish cellular pellicle, which in water is resolvable into oblong mucilaginous cells, much as in *Blennospora*.

ACHRYSUM, nov. gen.

Capitula 10–12-flora, homogama, dense glomerato-congesta; floribus omnibus tubulosis hermaphroditis fertilibus. *Involucrum* eradiatum duplex; exterius persistens, e squamis 5 obovatis exappendiculatis, costa lineari-spathulata herbacea, marginibus late scariosis; interius e squamis (circ. 10) pauciserialibus ovatis, hyalino-scariosis, appendicula minima luteola superatis, cum floribus deciduis. *Receptaculum* parvum subglobosum nudum. *Corollæ* infundibuliformes 5-dentatæ. *Antheræ* basi bicaudatæ. *Styli* rami apice capitellato-truncati. *Achenium* obovatum glabrum. *Pappus* caducus, e setis tenuibus 5–8 corollam æquantibus laxe plumosis potiusve pinnato-ramosis, basi in coronam hyalinam concretis.—Herba annua humilis, multicaulis, floccoso-lanata; foliis alternis linearibus mucronatis; capitulis parvis subpedicellatis, bracteolatis, dense lanatis, in glomerulum densum subglobosum vel depressum bracteis linearibus suffultum, ad apicem caulis arcte congestis. Flores flavidi.

A. *glomeratum.*

Swan River, *Drummond.*—Plant from one to four inches high, with somewhat the habit of *Antennaria alpina.* The heads, although pedicellate in a compound cymose cluster, are so densely glomerate, and also matted together with intricate wool, that it would be thought at first view to belong to the *Angiantheæ*, and indeed it is most nearly allied to the species which I have referred to *Crossolepis* and left in that division. The pappus is a good deal like that of *Pachysurus* of Steetz; its sparse pinnulæ are as large as the delicate seta from which they arise.

MONENCYANTHES, nov. gen.

Capitula triflora, glomerato-congesta; floribus hermaphroditis conformibus, sed duobus ovario inani sterilibus. *Involucrum* cylindraceum, imbricatum, floribus paulo brevius; squamis hyalino-scariosis obovatis, exterioribus brevioribus sessilibus, interioribus inferne costa viridula crassiuscula notatis unguiculatis, unguibus lana longa flores amplexante instructa. *Receptaculum* parvum nudum. *Corollæ* infundibuliformes, limbo 5-fido, lobis revolutis. *Antheræ* basi bisetosæ. *Styli* rami complanati, apice truncato-capitellati. *Achenium* obovato-fusiforme, erostre, subpedicellatum, læve. *Pappus* caducus, e setis paucis (6–10) tenerrimis barbellatis corolla brevioribus inter lanam intricatam squamarum absconditis.—Herba annua erecta, pedalis, arachnoideo-lanata; foliis alternis spathulato-linearibus; capitulis fusco-albidis parvis glomerato-fasciculatis sessilibus, singulis

bractea parva scariosa stipatis, glomerulis apice ramulorum congestis corymbosis; corollis luteis. (Nomen ex *μόνος*, *unicus*, *ἔγκυος*, *gravidus*, et *ἄνθος*, *flos*, conflatum.)

M. *gnaphalioides.*—*Calocephalus gnaphalioides*, Hook. in Mitch. Jour. 2nd Exped. (1848), p. 378.

Interior of subtropical New Holland, *Mitchell.*—This plant has more points of resemblance with *Leucophyta* than with *Calocephalus*, but it is abundantly distinct from both, and strictly belongs to the division *Helichryseæ*, next to *Stenocline*. Not having been incorporated into the Hookerian herbarium, it escaped my attention when elaborating the *Angiantheæ;* otherwise it would have been mentioned, along with the preceding genus, as exhibiting another evident transition from the *Angiantheæ* to the *Helichryseæ**.

HELIPTERUM, DC.

The subgenera here proposed might be altogether separated from *Helipterum*, with nearly or quite as good reason as *Hyalosperma*, Steetz, *Rhodanthe*, Lindl., *Hyridanthe*, Lindl., and perhaps even *Schœnia*, Steetz. The following has exactly the aspect of *Hyalosperma*†, but the achænia are neither glabrous nor plano-compressed, and the more numerous setæ of the pappus are barely barbellate: from *Schœnia* it is principally distinguished by the few merely infertile central flowers (as in many of the allied genera) having the same bifid style as the fertile flowers.

§ 1. GENIOSPERMA. Receptaculum planum, omnino nudum. Involucri campanulati squamæ scariosæ pauciseriales glaberrimæ, exteriores fuscæ inappendiculatæ, interiores appendice ovali petaloidea aurea radiantes. Flores hermaphroditi conformes, sed pauci centrales ovario infertili. Achenia oblonga, subtrigona, setulis brevibus rigidis appressis e basi glandulosa ortis hirta. Pappus uniserialis, e setis 16–18 rigidiusculis dense et breviter barbellatis ima basi concretis corollam subæquantibus.

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* The *Rutidosis arachnoidea*, Hook., briefly characterized in the same work (p. 341), is far from belonging to the genus *Rutidosis*, as it has a setose pappus and heterogamous flowers, a few of the marginal ones being female, but with a corolla like those of the hermaphrodite flowers, except that the limb consists of four instead of five lobes. It will probably become the type of a new genus.

† The hyaline pellicle of the achænia of *Hyalosperma* (which, like *Geniosperma*, should form merely a section in *Helipterum*) swells with moisture into a thick gelatinous mass, just as in *Blennospora*, etc.

H. *tenellum* (n. sp.): annua, spithamæa; caulibus simplicibus erectis apice nudo monocephalis foliisque filiformibus glabratis; radiis involucri patentibus uniserialibus nitide citrinis.

Swan River, *Drummond.*—Involucrum about 30-flowered, 3 lines in diameter, exclusive of the radiant appendages, which are of nearly the same length. The bristly, short hairs of the achenium are just like those in *Lawrencella*, Lindl., which are improperly called *glands.* They are the same as those of *Schœnia*, only very much shorter.

§ 2. SYNACHYRUM. Receptaculum planum, nudum. Involucrum obovatum, multiseriale; squamis omnibus omnino tenuiter scariosis albis. Achenia sericeo-villosissima. Pappus e paleis angustis 7–8 sericeo-pubescentibus usque ad medium tubuloso-concretis superne attenuatis breviter plumosis corollam quasi vaginatam subæquantibus.

H. *floribundum*, DC. Prodr. vol. vi. p. 217.

In the pappus, etc., as much as in habit, different from *H. punctatum* and *H. anthemoides*, DC., which alone remain to represent the section SERICOPHORUM, DC., if Steetz has correctly referred the *H. Cassinianum* and *H. Humboldtianum* to his genus *Schœnia.* The pappus consists of not more than eight thickish stout *paleæ*, which are concreted for half their length or more, but somewhat irregularly, into a tube, which is minutely hairy outside and inside; and the short free portions are as stout as the setæ in *Xyridanthe.* As this concretion takes place, more or less extensively, in many true *Heliptera*, it should not be assumed here as a generic character, to separate a single species.

§ 3. HELIPTERIDIUM. Receptaculum convexiusculum, alveolatum, alveolis integris. Involucrum depresso-hemisphæricum, pauciseriale, vix radians; squamis glaberrimis oblongis basi chartaceo-herbaceis apice marginibusque tenue scariosis discum haud superantibus. Flores hermaphroditi conformes, centrales ovario inani steriles. Achenia turbinata sericeo-villosissima. Pappus e setis circ. 20 rigidis plumosis corollam æquantibus.

H. *discoideum* (n. sp.): caulibus e radice annua plurimis gracilibus erectis (spithamæis) foliisque spathulatis et lanceolatis viscoso-pubescentibus apice longe nudo pedunculiformi monocephalis; involucri patentis squamis appendice brevi scariosa deltoideo-ovata superatis.—Variat α, involucro pallido; β, involucro sanguineo.

Swan River (β, Swan River to King George's Sound), *Drummond.*

Plant with somewhat the habit of *Bellis* or *Brachycome;* the heads from one-third to half an inch in diameter.

FLORULA HONGKONGENSIS: *an Enumeration of the Plants collected in the Island of Hong-Kong, by* Major J. G. Champion, 95*th Reg.*, *the determinations revised and the new species described by* GEORGE BENTHAM, ESQ.

(*Continued from p.* 199.)

COMPOSITÆ.

1. Cyanopis *pubescens*, Blume.—DC. Prodr. vol. v. p. 69.

Hong-Kong, a single specimen.

2. Vernonia (Tephrodes) *cinerea*, Less.—DC. Prodr. vol. v. p. 24.

Hong-Kong.

3. Vernonia (Strobocalyx) *solanifolia*, Benth. in Lond. Journ. Bot. vol. i. p. 486.

A beautiful species, abundant on the hills. Flowers purple, highly perfumed. These specimens and those gathered by Fortune (n. 175) are much further advanced than those of Hinds formerly described. The leaves are sometimes almost pointed. The involucral scales are short and blunt, almost rounded; the pappus more than twice the length of the involucre, the outer setæ short and rather numerous; the achenia smooth or with only a very few short hairs.

4. Vernonia (Lepidaploa) *congesta*, Benth. l. c. p. 487.

Very abundant at Hong-Kong. Flowers yellow, sweetly perfumed.

5. Vernonia (Lepidaploa) *Cumingiana*, Benth., sp. n.; fruticosa, subscandens? ramulis ferrugineo-tomentosis teretibus, foliis breve petiolatis ovali-oblongis acuminatis supra puberulis subtus rufo-tomentosis, paniculis terminalibus oligocephalis, capitulis pedicellatis circa 20-floris, involucri ovato-globosi squamis ovatis interioribus oblongis acutiusculis, achenio vix puberulo, pappi setis exterioribus paucis. —*Habitu* et foliis *V. extensæ*, DC., subsimilis, differt tomento ferrugineo densiore, capitulis majoribus, squamis acutioribus. *Achenia* 10-striata, vix compressiuscula, glabra v. minute puberula. *Pappus* rufus, involucro duplo longior; setæ exteriores quam interiores pleræque paulo breviores, nonnullæ tamen triplo breviores.

95684

Victoria Peak and elsewhere; gathered also by Mr. Cuming in the

Philippine Islands (n. 1092). This and some of the allied East Indian species come very near to some of the Eastern *Gymnanthema*, there being often but little difference between the outer and inner setæ of the pappus.

6. Elephantopus *scaber*, Linn.

In waste places, but scarce in Hong-Kong.

7. Eupatorium *Reevesii*, Wall. ex char. in DC. Prodr. vol. v. p. 179.

Hong-Kong. Gathered also by Fortune and distributed under n. A 20. It must therefore be the *E. Fortunei*, Turczan., as quoted in the Flora, 1852, p. 235.

8. Eupatorium *Lindleyanum*, DC. Prodr. vol. v. p. 180.

Victoria Peak. Cuming's n. 1349, from the Philippine Islands, appears to be the same species.

9. Aster (Orthomeris, Torr. et Gr.) *striatus*, Champ., sp. n.; ramis divaricatis striatis scabro-pubescentibus, ramulis bracteatis apice monocephalis, foliis lanceolatis semiamplexicaulibus, involucri lato-hemisphærici squamis 2–3-seriatis lanceolatis margine scariosis medio herbaceis puberulis, exterioribus paulo brevioribus, receptaculo plano, styli appendicibus lanceolatis, achenio adpresse piloso, pappi setis inæquilongis plerisque corollam æquantibus.—Pars caulis inferior deest. *Rami* (diffusi?) paucifoliati, semipedales ad pedales, superne laxe paniculati. *Folia* inferiora pollicaria, superiora multo minora, viridia, scabra. *Capitula* quam in *A. Altaico* paulo minora, involucri squamis margine late scariosis. *Ligulæ* 3½ lin. longæ, fere lineam latæ. *Achenia* oblonga, compressa. *Pappi* setæ sordidæ, minute scabrellæ, nonnullæ interdum multo breviores sed cum cæteris in seriem simplicem dispositæ.

45637

Hong-Kong.

10. Diploppapus *laxus*, Benth. in Lond. Journ. Bot. vol. i. p. 487.

On rather barren hills. The short external setæ of the pappus are few and variable, usually not more that eight or ten, and not easy to see without careful manipulation. It would probably, as well as some East Indian *Diplopappi*, be better referred to the section *Orthomeris* of *Aster*.

11. Diplopappus *baccharoides*, Benth. in l. c. var.

Abundant on barren hills. The leaves in these specimens are more often rounded at the base than in Mr. Hinds's; the pappus is longer, and the short outer setæ much fewer, sometimes I have found only one or two, and in some cases I have been unable to detect any. If this very unsatisfactory character of the double pappus be abandoned, this species would also rank under the section *Orthomeris* of *Aster*, but in a very different group from the last; the involucres being turbinate-campanulate, and imbricated in several series. The appendages of the style are broadly lanceolate.

12. Erigeron (Cœnotus) *linifolium*, Willd. Spec. vol. iii. p. 1955.—Conyza ambigua, DC. Prodr. vol. v. p. 381.

A most common annual on the road-sides and in the town of Victoria.

13. Lagenophora *Billardieri*, Cass.—DC. Prodr. vol. v. p. 307.

A single small specimen, agreeing very well with the small entire-leaved Sydney plant considered by De Candolle as a variety of his *Lagenophora Billardieri*, as well as with two East Indian specimens. Dr. Asa Gray has also ascertained that the *Ixauchenus lyratus*, Cass., is the same plant.

14. Amphirapis *leiocarpa*, Benth. in Lond. Journ. Bot. vol. i. p. 488.

Abundant in ravines.

15. Grangea *Maderaspatana*, Poir.—DC. Prodr. vol. v. p. 373.

Common the Happy Valley (Col. Eyre).

16. Blumea *Javanica*, Zoll. Flora, 1847, p. 531.

Victoria Peak. This agrees precisely with Zollinger's Javanese specimens n. 25, referred to by him as the type of this species. It will probably be found to be truly distinct from the widely-spread *B. lacera*, which includes several of De Candolle's species. The heads of flowers in *B. Javanica* are considerably larger, the scales of the involucre much more imbricate and broader, especially the outer ones, which are short, loose, and densely pubescent. Fortune's n. 172 from China appears to be the common *B. lacera*, which may very likely be also found in Hong-Kong.

17. Blumea *holosericea*, DC. Prodr. vol. v. p. 442.

A single specimen in a young state, agreeing well with my East Indian one, which is also young. The species should probably be referred as a mere variety to *B. lacera*.

18. Blumea *Chinensis*, DC. Prodr. vol. v. p. 444.

Tolerably common, trailing in ravines. Hooker and Arnott (Bot. Beech. p. 195) published a different plant as *Blumea Chinensis*, which name Steudel altered to *B. Arnottiana*, overlooking the reference subsequently made by Hooker and Arnott themselves (Bot. Beech. p. 265) of their plant to the *Duhaldea Chinensis*, DC. Again, Walpers (Pl. Meyen. p. 294) has since given the same name of *Blumea Chinensis* to a third plant, which appears to be near *B. lacera*, but to differ especially in the very hairy achenia.

19. Siegesbeckia *orientalis*, Linn.—DC. Prodr. vol. v. p. 495.

Gathered in Hong-Kong by Mr. Hinds, and observed also by Major Champion, though not collected by him.

20. Wollastonia *scabriuscula*, DC. Prodr. vol. v. p. 547.

About rocks and hedges close to the sea-side.

21. Bidens *Chinensis*, Willd., and 22, Bidens *bipinnata*, Linn.

Both common weeds.

23. Anisopappus *Chinensis*, Hook. et Arn. Bot. Beech. p. 196.

Victoria Peak.

24. Pyrethrum *Sinense*, Lab.—DC. Prodr. vol. vi. p. 62.

Victoria Peak and elsewhere.

25. Pleiogyne *cardiospermum*, Edg. in Trans. Soc. Linn. Lond. vol. xx. p. 71.

In rice-fields, abundant.

26. Artemisia *Japonica*, Thunb.—DC. Prodr. vol. vi. p. 100.—*A. glabrata*, Wall.—DC. l. c.

Saywhan and some other places, but not common.

27. Gnaphalium *multiceps*, Wall.—DC. Prodr. vol. vi. p. 222.

Common in rice-fields. The *G. confertum*, Benth., gathered in Hong-Kong by Mr. Hinds, may prove to be a mere variety of this species, with much larger involucres and a dense compact inflorescence.

28. Gynura *pseudo-china*, DC. Prodr. vol. vi. p. 299. var. *pubescens.*

Victoria Peak and elsewhere.

29. Senecio *Hindsii*, Benth. in Lond. Journ. Bot. vol. i. p. 488.

Ravines of Victoria Peak.

30. Saussurea *linearis*, Champ., sp. n.; glanduloso-scabra, foliis longe linearibus basi angustatis angustissime decurrentibus, corymbo late ramoso, involucri ovato-cylindracei squamis imbricatis interioribus in appendicem scariosam subrotundam desinentibus.—*Caulis* ultrapedalis, erectus, strictus, angulato-striatus, superne corymboso-ramosus, ramis longiusculis divergentibus apice subdense pleiocephalis.

Folia ima desunt, intermedia 2–3 poll. longa, vix 1½ lin. lata, margine revoluta, infra medium longe angustata, utrinque viridia et scabriuscula, superiora decrescentia, summa distantia, parva, bracteæformia. *Involucra* 5 lin. longa, extus leviter arachnoideo-villosa, squamis striatis, extimis perpaucis apice subnudis, intermediis appendice parva, intimis appendice majuscula lata scariosa colorata terminatis. *Receptaculi* paleæ numerosæ, angustæ, fere setiformes, caducæ, liberæ v. nonnullæ basi brevissime connatæ. *Antherarum* caudæ sublanatæ. *Pappi* interioris setæ plumosæ basi in annulum connatæ, exterioris setæ paucæ (interdum 2–3 tantum) integræ caducissimæ, interioribus duplo breviores.

Victoria Peak.

31. Cirsium *Chinense*, Gardn. et Champ. Kew Journ. Bot. vol. i. p. 323.—My specimens, communicated by Major Champion as the species sent to Dr. Gardner, have not the foliaceous bracts described by him, which were probably accidental in his specimen. The *C. oreithales*, Hance in Walp. Ann. vol. ii. p. 944, appears from his character to be the same species.

Victoria Peak and other hills.

32. Ainsliæa *fragrans*, Champ., sp. n.; foliorum radicalium petiolo non alato, lamina ovata obtusa cordata integerrima v. vix calloso-denticulata subtus villosa, capitulis secus caulem subsessilibus.—*Caules* et petioli lana laxa rufa vestiti. *Folia* omnia subradicalia, supra scabra et parce pilosa, subtus pilis longis rufis plus minus vestita, ad margines denticulis callosis remotis sæpe notata, basi auriculis rotundis profunde cordata. *Scapus* 1–1½-pedalis, a medio ad apicem interrupte florifer. *Capitula* fere *A. apteræ* v. paulo minora, glabra, sessilia v. pedicello lineam longo fulta, squamis angustis acutissimis nitidis. *Flores* et *fructus A. apteræ.*

Scarce on Victoria Peak. Leaves purplish-pink underneath. Flowers in December, white, with a most delicious perfume of almonds. Stamens purple.

33. Gerbera *ovalifolia*, DC. Prodr. vol. vii. p. 17.

On hills, Victoria Peak, Mount Parker, etc. The *G. amabilis*, Hance in Walp. Ann. vol. ii. p. 947, from the same localities, must, from his character, be closely allied to the above, and only appears to differ in the scales of the involucre, smooth, coloured, and scarious at the tips and margins. Our plant has these scales entirely herbaceous and pu-

bescent on the back, and agrees in every respect with my East Indian specimens.

4568

34. Lactuca *brevirostris*, Champ., sp. n.; glabra, caule terete erecto apice paniculato, foliis lineari-sublanceolatis elongatis acuminatis basi amplexicauli-dilatatis auriculis rotundatis dentatis cæterum integerrimis, pedicellis bracteolatis, involucri squamis exterioribus breviter interioribus longe lanceolatis obtusiusculis, rostro achenio ipso 2–3-plo breviore.

Hong-Kong. At first sight it much resembles the *L. longifolia*, Wall., but the leaves are dilated and auricled, not narrowed at the base, and the beak of the achenia is much shorter. The shape of the heads of flowers is ovate as in *L. longifolia*, not narrow cylindrical as in the section *Mycelis*, to which our plant is allied by the achenia.

35. Taraxacum *dens-leonis*, Desf.—DC. Prodr. vol. vii. p. 145.

Found among the ruins of an old house.

36. Youngia? sp., allied *Y. napifolia*, DC., perhaps a mere variety, but there are no achenia far enough advanced to determine its character.

Hong-Kong, a single specimen.

The two plants of Mr. Hinds which I described as *Barkhausia tenella* and *Brachyramphus ramosissimus* are not among Major Champion's. They are both allied to *Youngia*, and, as observed by Wight, the difference between *Brachyrhamphus* and those *Youngiæ* of which the achenia are narrowed at the apex on the one hand, and some *Lactucæ* of the section *Mycelis* on the other, is but very slight. The fruit in my specimen of *Barkhausia tenella* is very young, but has decidedly too long a beak to be placed in *Brachyramphus* or *Youngia*. The *Brachyramphus ramosissimus* is certainly a congener of and nearly allied to *Brachyramphus Heyneanus*, in whatever genus that species definitively remains; it is equally certain that it has no relation to *Dubyæa* in habit or character, to which however Mr. Hance has removed it.

To the above *Compositæ* must be added a *Xanthium*, probably *X. Indicum*, Roxb., *Gynura ovalis*, DC., *Emilia sonchifolia*, Cass., and *Sonchus oleraceus*, Linn., all of which have been observed in the island or gathered by Mr. Hinds, but are not in Major Champion's collection.

(*To be continued.*)

Abstract of a Journal kept during the voyage of H.M.S. Herald; *by* BERTHOLD SEEMANN.

(*Continued from p.* 217.)

On the 16th of March I returned to Simon's Town. Mr. Zeyher accompanied me to Wynberg, where we paid a visit to Mr. James Bowie. He was living in a nice little cottage surrounded by a flower-garden, in which he cultivates many valuable specimens. We remained several hours, and were entertained by him with an account of some of his travels, and several interesting anecdotes of his former companion, Allan Cunningham. When the mail coach arrived I took my leave of Mr. Zeyher, but a few days later I had the pleasure of seeing him at Simon's Bay, whence we made another excursion together on the adjacent mountains. During his stay I directed the attention of Mr. Zeyher to the *Xanthium spinosum*, Linn., a herb which has become perfectly naturalized, abounding on the sea-shore and among rubbish near dwellings. He had never before observed it in any part of the colony, and is of opinion that it must have been but lately introduced. I have always made it a point to notice the first plants which I could reach after landing at a place, and I have found that in most instances they were foreign, not indigenous; the *Xanthium spinosum*, Linn., was one of these.

I asked Mr. Zeyher respecting the Cape Aloes and Bukus, as suggested by Sir William Hooker in Sir John Herschel's 'Manual of Scientific Inquiry.' He informed me that the *Aloë ferox*, Lam., formerly supplied the drug called Aloes; but that, as this species has become scarce, it is now extracted from the *A. Africana*, Mill., and that from the latter that used at Bethelsdorp, near Algoa Bay, is procured. Concerning the Bukus he states that the article is principally obtained from the *Diosma crenata*, DC., and the *Empleurum serratifolium*, Sol.; he himself having seen the natives gathering it.

H.M.S. Herald left Simon's Bay on the 27th of March, and anchored on the 8th of April off James Town, St. Helena. Next day I walked to Longwood, which is now tumbling to ruins; Napoleon's tomb also, since the removal of the lid, no longer protected from the influence of the weather, is sharing the same fate, and in a few years the island will probably retain nothing save the recollection of having been the residence of one of the great heroes of the 19th century. The weeping willows which formerly shaded the grave have long since perished, and their last stumps were carried to France in 1840. The tree standing in the Royal Gardens at Kew has therefore as good a claim to be considered genuine as those now at St. Helena; for they are all only offshoots from the former ones. The little fountain, from which Napoleon used to drink, still pours forth its crystal water. It is overhung by a mass of Brambles (*Rubus pinnatus*, Willd.) and Birdlayer (*Buddleia Madagascariensis*, Lam.), both of which supplied specimens for my herbarium.

Subsequently I made an excursion to Diana's Peak, the most elevated spot in St. Helena, and the only one where the indigenous vegetation still prevails; yet even there it is fast receding,—like the Indian race before the Caucasian,—and in almost every other part has been completely superseded by plants introduced from foreign countries. The "Jackson" (meaning Port Jackson) Willow, as the people call the *Acacia longifolia*, Willd., has overspread whole districts, and forms regular thickets. I have observed that Acacias always thrive best in places that are hard, stony, and much exposed to the sun and wind. In a rich alluvial soil, or in moist shady localities, they are apt to lose many of their peculiarities. The *Acacia spadicigera*, Cham. et Schlecht., for instance, is in suitable situations a tree of regular and pyramidal growth, and always full of blossom, while on the banks of rivers, whither its seeds are occasionally swept by the heavy tropical rains, it is an ill-looking, straggling shrub, and hardly ever flowers.

The *Buddleia Madagascariensis*, Lam., is abundant, and makes very good hedges, through which cattle cannot break, as its branches, being decumbent and one over the other, form regular layers like those of a bird's nest; hence its vernacular name, Birdlayer. I quite agree with Mr. Bentham (DC. Prodr. vol. x. p. 447) that this plant is not indigenous, but merely a fugitive from some garden. The Furze (*Ulex Europæus*, Linn.), with its golden blossoms, is found almost everywhere, and appears to be more robust than in Europe, a change probably produced by climate. Its young sprouts are considered an excellent fodder, and are also, when bruised, given to the cattle as a vermifuge. The *Pelargonium inquinans*, Ait., *Mesembryanthemum edule*, Linn., *Leonotis Leonurus*, R. Br., several Phylicas and others have been brought from the Cape, and are now mingled with Mexican Agaves and Opuntias, and European Oaks and Firs. The Date Palm is cultivated in the valleys; several avenues near the town consist of the *Ficus religiosa*, Linn., and other species of Fig; in short, in the lower grounds the eye meets everywhere plants originally derived from other parts, and even on the highest summits I noticed already a great mass of the *Fuchsia coccinea*, Andr., and other intruders.

In ascending Diana's Peak the country assumes a different and peculiar aspect. Brambles (*Rubus pinnatus*, Willd.) become more plentiful, and gradually mingle with shrubby *Campanulaceæ* and *Scævoleæ*, with Mosses, *Lycopodia*, Tree-ferns, and the Cabbage-tree (*Pterolobium arboreum*, R. Br.), with other arborescent *Compositæ*. The latter are characteristic of moist and elevated mountains, and I do not remember to have met with them in any other localities. The Tree-ferns (*Dicksonia arborescens*, Herit.) are generally about eight feet high; here and there, however, specimens are seen attaining as much as fourteen feet. The top of the mountain is reached without difficulty by a footpath, and presents a most charming view of the surrounding country. One can hardly imagine more lovely scenery, or that the foot rests upon an island which from the sea appears to be merely a barren rock. What could have induced the people to dedicate the peak to Diana is difficult to explain. That goddess has certainly little here to preside over; the wire-bird, an indigenous species, some pheasants, formerly introduced from China, a few partridges and wild rabbits, field-mice, and perhaps now and then a herd of cattle that have strayed, are the only large animals seen on the mountain.

On the 12th of April we departed from St. Helena, and in five days reached Ascension. Never have I set my foot in a more desolate place. The neighbourhood of the garrison, and indeed the greater portion of the island, looks like cinders and ashes; the only green spot is the highest peak, which has most appropriately been named "Green Mountain." On Good Friday I, accompanied by Messrs. Maguire, Parsons, and Anderson, ascended it. The distance is seven miles, but appears considerably more, probably on account of the monotonous aspect of the district through which the road leads. It was interesting to notice how at every step the vegetation increased. In the immediate vicinity of the landing-place I found only a few isolated tufts of Euphorbias and three Castor-oil plants, the latter much dwarfed. On advancing two miles they became more frequent, and were joined by the

the *Vinca rosea*, *Argemone Mexicana*, *Nicotiana Tabacum*, an herbaceous *Composita*, an *Amaranthus*, and the *Lycopersicum esculentum*. A little further on a *Crucifera*, a *Panicum*, and a *Sida* made their appearance; and thus by degrees the soil became more and more clothed with verdure, till at last, when approaching the actual summit, a total change took place, and we found ourselves in a comparatively fertile region.

Ascension was formerly uninhabited, and, excepting a few Mosses, Lichens, and Ferns, destitute of any vegetation. About sixteen years ago, however, the British Government ordered trees to be planted, and the land of Green Mountain to be cultivated. Collectors were sent to St. Helena and the Cape of Good Hope, to gather the productions of those regions. The newly introduced plants grew up, and by their attraction the moisture has increased. Considering the progress already made, it is not unreasonable to expect that in time the whole of Ascension will be capable of supporting vegetation. This time could undoubtedly be hastened if the cultivation were extended to the lower parts. Hitherto the want of fresh water has been deemed the great obstacle, but I think this might be successfully surmounted if plants were selected which can be sustained by salt water as well as by fresh, so that, after these have attracted sufficient moisture for their own support, the irrigation with salt water might be discontinued without injury to them. I only know two trees of this nature, the Overal (*Varronia rotundifolia*, Alph. DC.) and the Algarrobo (*Prosopis horrida*, Kunth); these are found in Ecuador and New Granada on the very verge of the ocean, and also in the most arid places of the Peruvian deserts, where sometimes for years nothing save dew is known to fall. They are moreover highly useful. The berries of the Overal form excellent food for poultry, and the Algarrobo produces a bean which is almost the sole support of the numerous horses, mules, donkeys, and goats of the arid regions. It would be difficult to find in the whole vegetable kingdom two plants whose constitution is better adapted for the island, or whose introduction would be attended with more beneficial results, both directly and indirectly, than the two alluded to*.

In the Government Garden we met a corporal of Marines, who had been one of the party that planted the first trees. He seemed to be a rather intelligent person, and, as the head-gardener was absent, conducted us over the whole establishment. We soon after fell in with two naval officers, and, guided by them, went through the various tunnels. They explained to us the way in which the water is collected, and conducted to the coast; a contrivance so nicely regulated that hardly a drop of rain is lost. We were also shown what may be considered the Lion of Ascension, the great "Pride of India" (*Melia Azedarach*, Linn.), the largest tree in the island; it stands in a creek, is fifty feet high and has a stem from nine to twelve inches in diameter. After having made the circuit of the mountain, we ascended to its summit—the "*Big Peak.*" It is 2800 feet above the sea, and almost entirely overgrown with Ferns and Bramble (*Rubus pinnatus*, Willd.), the latter being one of the plants brought from St. Helena. Several seats and a table have been put up on the highest point. The view is quite pleasing; all around are fields cultivated with Sweet Potatoes, Vegetable Marrow, Pumpkins, and Bananas, while at a distance nothing save desolation prevails. How great must have been the labour, perseverance, and foresight that could produce such an effect, and change, as it were, a dreary desert into a fertile and inhabitable region!

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* Seeds in large quantities may easily be obtained of any trader on the Peruvian coast, at little or no expense.

On the 20th of April the Herald left Ascension, and crossing the equator on the 26th of the same month, she passed in latitude 30° north through numerous floes of *Sargassum* weed, sighted on the 20th and 21st of May the islands of Flores and Corvo, two of the Azores, and arrived on the 6th of June, 1851, at Spithead; whence she proceeded to Chatham to be paid off.

Thus, after a lapse of nearly five years I had once more the happiness of stepping on the soil of Europe. I had during that time circumnavigated the globe, made three voyages towards the North Pole, landed on twenty islands, visited thirty-three cities, passed through sixty villages, travelled at least 8000 miles by land, and sailed more than 100,000 miles by sea. Whether due advantage has been taken of the opportunities offered, and the result of my mission equal to its magnitude, I must leave others to decide.

LICHENES HIMALAYENSES: *being an Enumeration of the Lichens* collected in the Himalaya Mountains by* Captain R. Strachey, *of the Bengal Engineers, and* J. E. Winterbottom, Esq., F.L.S., *during the years* 1847 *and* 1848; *by the* REV. CHURCHILL BABINGTON, M.A., Fellow of St. John's College, Cambridge.

The Lichens described below were kindly placed in my hands by Captain Strachey and Mr. Winterbottom: they are of considerable interest, as being among the first spoils of the *Lichen-flora* of the Himalaya Mountains: among them are several which appear to be new; the greater proportion, however, are the same as the European species. Valuable collections of Lichens, from other parts of the same mountains, have been made by Dr. T. Thomson and by Dr. J. D. Hooker, a considerable portion of which they have been so good as to show me: among them are many which do not occur in the following catalogue. It seems best, however, to enumerate the present Lichens separately, both because they have been collected at some distance from the places visited by the other two botanists, and more especially because some time may elapse before the whole of the Himalayan Lichens can be properly examined.

1. Usnea *longissima*, Ach.

HAB. Chinar, Kumaon, alt. above the sea 8700 feet; barren. (Coll. n. 23.)

2. Usnea *ceratina*, Ach.

HAB. On wood; the same habitat and altitude as the preceding. (Coll. n. 24.)

Apothecia very pruinose; the denuded disc inclining to red; branches of the thallus smooth, sorediated; fibrillæ very numerous, flaccid, divaricated.

3. Usnea *Himalayana*, Bab.; thallo plano molliusculo pendulo longissimo pallide ochroleuco aut virescente ramosissimo sorediis minutis albidis adsperso demum articulato, ramis flexuosissimis repetitim ramosis, fibrillarum apicibus concoloribus; apotheciis (imperfectis) planiusculis carneis subsessilibus demum obscurioribus immarginatis, margine subfibrilloso.

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* I am indebted to the kindness of Messrs. Strachey and Winterbottom, and to that of the Hon. the Court of Directors of the East India Company, for the privilege of selecting specimens for my own herbarium from their collection of Lichens.—C. B.

HAB. Binsur, alt. 7500 feet; on oaks. May. (Coll. n. 23 *bis.*)

A very different species from any *Usnea* with which I am acquainted, but probably allied to *U. dichotoma,* Fries, Syst. Orb. Veg. p. 282, from Nepal. The similarity to *Alectoria sarmentosa,* Ach., is very great, from which lichen the central thread at once distinguishes it.

Main stems diverging from a central point, eight to twelve inches long, occasionally beset with short horizontal fibres: ultimate fibres and branches often more or less rufous. The apothecia are very few, and so imperfect, that they had better be called *cephalodia:* they show an inclination to the fibrillose margin which is found in other species of the genus. This lichen is accompanied by *Parmelia leucomela* and *P. varia?*

4. Evernia *Stracheii,* Bab.; thallo ochroleuco cartilagineo rigido sublacunoso compresso subcanaliculato nitidiusculo ramoso, ramis sublinearibus irregulariter palmatis et laciniatis, apicibus plus minus truncatis bi- seu tri-fidis, marginibus denticulos ramulosque corallinoideos nigro-terminatos passim proferentibus, pagina inferiore versus basin subsanguinolento, apotheciis . . .

HAB. Gori River, Kumaon, (on the ground?) among moss and dead leaves; alt. 4700 feet. Pindari, Kumaon, mixed with roots; alt. 12,000 feet. Bompras Garhwál, with *Cetraria ambigua,* Bab.; alt. 16,000 feet. (Coll. n. 41.)

Allied to *E. prunastri,* Ach., with which it agrees in the mode of ramification (though our lichen is more irregular), and in the inner texture of the thallus; but the upper surface of *E. Stracheii* is far less lacunose and more rigid above, and very differently coloured below. *Parmelia (Evernia) denudata,* Hampe (in Linnæa, 1843, p. 121), appears from the description to have some points in common with our plant, but it can hardly be the same species.

5. Ramalina *farinacea?* Ach.

HAB. Barren fragments, from Chinar, Kumaon, alt. 8700 feet; and from Gori River, Kumaon.

6. Cetraria *ambigua,* Bab.; thallo foliaceo depresso submembranaceo ochroleuco laciniato, laciniis linearibus lobatis apice bi- seu tri-fidis subconcavis marginibus nigro-denticulatis, pagina superiore lævi (non lacunosa), inferiore corrugata pallida nuda, apotheciis . . .

HAB. Bompras, Garhwál, growing on wood and over roots, alt. 16,000 feet; barren. (Coll. n. 6.)

Allied to *C. sæpincola*, Ach., from which it differs in colour, though there is a slight inclination to become olive at the extremities; and also to *C. nivalis*, but the thallus is more membranaceous and spreading, and not lacunose above, as in that species. In decay it becomes brown below, with a very slight tinge of purple, as it appears. Probably this may be the same species as Fries alludes to at page 40 of the 'Lichenographia Europæa:' his plant is also barren.

7. Cetraria *Stracheii*, Bab.; thallo amplissimo patulo coriaceo sublacunoso nitido glauco deinde sublutescente, lobis amplis rotundatis fertilibus digitatis, subtus pallidiore demum (in senectute) fulvescente rugis elevatis confertissimis sinuosissimis reticulato, ad interstitia et dorsa rugarum passim sorediis minutis cyphelliformibus niveis guttato, passim fibrilloso, fibrillis albidis rigidis, apotheciis *posticis* ad margines loborum sitis confertis *demum omnium maximis*, disco castaneo corrugato margine thallode irregulari cincto.

Hab. Katki, Kumaon, alt. 7200 feet; on bark. (Coll. n. 11.)

The most splendid species of the genus, and one of the most distinct. In the magnitude and colour of the thallus, and in the size, position, and colour of the apothecia, it immediately reminds us of *Nephroma polare*; but it is a true *Cetraria*, and perhaps more nearly allied to *C. glauca* than to any described species. Thallus 6–8 inches broad, forming irregular patches spreading over bark and sticks, rigid; a single lobe is sometimes 3 inches broad; lobes rounded, waved and scalloped, margined by the neat brown apothecia, at first very minute and thick-set, but at length becoming almost $\frac{3}{4}$ of an inch broad, and giving the main lobes a digitated appearance; the base of the apothecia is semi-lunate, and extends at both extremities of the lune considerably beyond the lobe of the barren thallus, so that the latter presents a constricted appearance above at the part to which the disc is adnate, as is the case in *N. polare*, though in a less remarkable degree. Thallodal margin sometimes very narrow and even evanescent; at other times or on other parts of the same apothecium leafy and lobed, and bearing young apothecia on the lobes. Medullary stratum pure white. Under surface variable in colour, whitish, dirty yellow, brownish, and in decay inclined to be fulvous; for the most part naked, but in places furnished with dirty-white branched fibres or bristles; the wrinkles are very much raised, sinuous and anastomosing, giving the under surface a reticulated appearance (cf. *Nephroma cellulosum*, Ach.). In some of the interstices and on some of the ridges are minute snow-white soredia, much resembling the cyphellæ of some *Stictæ* (of *Sticta Wallichiana*, Bab. MSS. more especially). The microscope showed the apothecia to be full of acicular paraphyses which became darker at the extremities; I failed to discover the asci; and found only one sporidium, which was obovate and biseptate. This very remarkable plant connects the genus *Cetraria* with *Nephroma*.

8. Solorina *saccata*, Ach. Var. *b. pruinosa*, Fries.

HAB. Kathi Pass, near Dwali, north side; Kumaon; alt. 8000 feet; fertile.

The form *a vulgaris*, Fries, *thallo nudo*, is unknown to me. Mougeot's and Schærer's specimens are pruinose; so is every specimen more or less which I have seen from the Continent of Europe, or from Britain; and so also are these. So likewise is the Abyssinian *Solorina Simensis*, Hochst. (in Linnæa, 1843, p. 17); which is said to differ from the present species in having the under side white, variegated with ferruginous veins; the Indian specimens are more ferruginous below than is commonly the case in the European specimens (though some from the Tyrol scarcely differ); the veins are much the same colour as the rest, but rather darker; the thallus is whitish below at the edges. So far as I can judge from a minute specimen of *Solorina Simensis* (Schimper! 1393), it is only a slight variety of *S. saccata*.

9. Peltidea *horizontalis*, Ach.?

HAB. Barren; growing on micaceous rocks. Dwali; Kumaon, 9000 feet above the sea.

Thallus 8 inches broad; it appears to belong to this species, but being barren the determination is rather uncertain.

10. Peltidea *canina*, Ach.

HAB. Chinar, Kumaon, alt. 8700 feet above the sea; Dugli, Kumaon, alt. 9000 feet above the sea; fertile in both localities. (Coll. n. 8.)

The thallus is more membranaceous than usual, decidedly tomentose at the margins, beautifully reticulated with veins below, which towards the margins are pale (reddish when wet), towards the centre darker. Apothecia growing from elongated lobes of the thallus, almost as in *P. polydactyla*. The colour of the thalli both wet and dry is the same as in *P. canina*. A larger specimen from Dwali (Coll. n. 7) is barren; it has the thallus somewhat thicker, more crisped, the lobes ample, lacunose, dark, rufescent, and the fibres on the whole darker, margins decidedly tomentose; it appears to belong to the present species rather than to *P. rufescens*, if indeed the latter be distinct.

11. Sticta *pulmonacea*, Ach. Var. *hypomela*, Delise, Stict. p. 144. fig. 64.

HAB. Chinar, Kumaon, alt. 8700 feet; growing over sticks; fertile. (Coll. n. 10.)

Tomentose below; down bluish-black towards the edges of the lobes, paler in most other parts; apothecia rufous, becoming darker by age.

12. Sticta *retigera*, Ach.

HAB. Dugli, Kumaon, alt. 10,500 feet; growing upon sticks, and over mosses (thallus very deeply scrobiculated, becoming dark, somewhat polished, much bullated below, down mostly of a metallic deep violet-black); also at Chinar, Kumaon, 8700 feet (thallus much less scrobiculated, sorediated on the ridges, paler, less bullated below; down for the most part of a much less deep black; about the centre of a dull blackish-brown); barren in both localities. (Coll. n. 9.)

The form from Chinar connects this species so called with the var. *hypomela* of *S. pulmonacea*, Ach. It is easy to select well-marked examples of *S. pulmonacea*, *linita*, and *retigera*, which appear distinct enough, but other intermediate specimens prove them to be states of one polymorphous species. *S. retigera* in its normal form does not appear to wander far from the tropics of the old world; being found a little north of them in India, and a little within them in Bourbon and the Mauritius; I have however a Scotch specimen of *S. pulmonacea* so dark below that it might almost be called *S. retigera*.

13. Sticta *herbacea*, Delise. (Parmelia h., *Ach.*)

HAB. Chinar, Kumaon, alt. 8700 feet; Kurim Pass, Kumaon, alt. 7500 feet; Kathi Pass, Kumaon, alt. 8000 feet; on bark; fertile in each locality. (Coll. n. 20, and Coll. n. 15 pr. p.)

14. Parmelia (Imbricaria) *tiliacea*, Ach.

HAB. Chinar, Kumaon, alt. 8700 feet; fertile and large. Madhari Pass, Kumaon, alt. 8200 feet; on rock, fertile (smooth form = *P. scortea*, Ach. (Coll. n. 19, and no. 15 pr. p.)

15. Parmelia *perforata*, Ach.

HAB. Chinar, Kumaon, alt. 8700 feet; on bark; fertile (adult apothecia perforate and imperforate on the same specimen); Gori River, Kumaon, alt. 4700 feet; barren. (Coll. n. 14 *bis* and n. 16.)

16. Parmelia *perlata*, Ach.

HAB. Garhwál; on bark; fertile (thallus smooth-edged, ample). Karim Pass, Kumaon, alt. 7500 feet; fertile (edges of thallus pulverulent; habit that of *Cetraria glauca*, Ach.).

Parmelia *perlata*, var. *saccatiloba*, Bab. MSS. P. *saccatiloba*, Tayl.! in Hb. Hook. (nuda); et P. *cristifera*, ejusd.! l. c. (sorediis marginalibus insignis = P. *perlata*, v. *grandis*, Laur.! in Linnæa, 1837, p. 45.)

HAB. Chinar, Kumaon, alt. 8700 feet; Gori River, Kumaon, alt. 4700 feet; barren in both localities.

Differs from *P. perlata*, Ach., in nothing but its ample size; the specimens which I have seen are from tropical and subtropical countries, and barren. The Himalayan plant is without soredia. The sorediated form (*P. cristifera*, Tayl.!) bears glomeruli so copiously, that the appearance of the plant resembles that of *Sticta glomulifera*, Del.

17. Parmelia *lævigata*, Ach.

HAB. Chinar, Kumaon, alt. 8700 feet; fertile. (Coll. n. 4.)

These specimens are a little different from the common form: their upper surface more resembles *P. physodes.*

18. Parmelia *caperata*, Ach.

HAB. Chinar, Kumaon, alt. 8700 feet; on rock; barren, and much sorediated. (Coll. n. 3.)

19. Parmelia (Physcia) *cirrhata*, Fries, Syst. Orb. Veg. p. 283.

HAB. Chinar, Kumaon, alt. 8700 feet; on sticks; fertile.

Habit of *Evernia furfuracea*, Fries. The same plant has been gathered in Nepal by Wallich. From the description of Fries (*ut supra*) and his remarks (Lich. Europ. p. 76) there is little doubt that his plant (from Nepal) is the same as ours. (Coll. n. 22.)

20. Parmelia *leucomela*, Ach.

HAB. With the preceding; fine and fertile, growing on the ground apparently, among leaves (of *Rhododendra?*) and fragments of a *Cladonia* (*C. perfoliata?* Florke = *C. perfilata*, Hook.).

21. Parmelia *speciosa*, Ach.

HAB. Gori River, Kumaon, alt. 4700 feet; on rock. Chinar, Kumaon, alt. 8700 feet; on bark. Fertile in both localities. (Coll. n. 17.)

22. Parmelia *stellaris*, Ach.

HAB. Shelong, Kumaon, alt. 13,000 feet; fertile. (Coll. n. 32 pr. p.)

23. Parmelia *cæsia*, Ach.

HAB. Barren fragments accompany the preceding. (Coll. n. 32 pr. p.)

24. Parmelia *pulverulenta*, Ach., var. *muscigena*, Fries (*P. muscigena*, Ach.)

HAB. Gori River, Kumaon, alt. 4700 feet; barren. Shelong, Kumaon, alt. 13,000 feet; fertile. (Coll. n. 32 *bis* and n. 5 pr. p.)

25. Parmelia (Placodium) *chrysoleuca*, Ach.

HAB. On rock, at Acho in Astore; above Burzil; and at Shelong, Kumaon, alt. 13,000 feet.

Fertile in all the localities. Two specimens from Acho are monophyllous; the thallus is very thick, the hypothallus almost destroyed; the apothecia cover almost every particle of the upper surface, being rather darker than the normal form when they are dry; when moistened they become very livid, of various hues, flesh-coloured and purplish. The other specimens are fine and normal; the apothecia are unchangeable by moisture, of a pale, but somewhat bright orange-red.

26. Parmelia *oreina*, Ach.

HAB. Shelong, Kumaon, alt. 13,000 feet; fertile. (Coll. n. 34.)

27. Parmelia *saxicola*, Ach.

HAB. Shelong, Kumaon, on slaty rock, alt. 13,000 feet; fertile. (Coll. n. 31.)

28. Parmelia *elegans*, Ach.

HAB. With the preceding; fertile. (Coll. n. 30.)

29. Parmelia (Psora) *melanaspis*, Wahl. (forma *a Fries*, Schær.! n. 330.)

HAB. Shelong, Kumaon, alt. 13,500 feet; fertile.

30. Parmelia (Lecanora) *varia ?* Ach.

HAB. Fragments occur upon the bark upon which *Usnea Himalayana* grows. Possibly this is *P. elatina*, Ach.

31. Parmelia *vitellina ?* Ach.

HAB. Shelong, Kumaon, alt. 1300 feet; bad specimens; granules scattered, chrome-yellow.

32. Parmelia (Urceolaria) *calcarea ?* Fries.

HAB. Shelong, Kumaon, alt. 13,000 feet; fertile; probably belonging to this species, but in a poor condition. Another aged specimen (same locality) of this subgenus resembles *Urc. scruposa*, Ach. (Coll. n. 34 and 35 pr. p.)

33. Stereocaulon *tomentosum*, Fries.

Hab. Gori River, Kumaon, alt. 4700 feet; fertile. (Coll. n. 27.)

34. Stereocaulon *corallinum*, Schreb.

Hab. Pindari glacier, Kumaon, alt. 12,000 feet; fertile. (Coll. n. 26.)

35. Stereocaulon *ramulosum*, Ach., var. *strictum*, Bab. MSS.; ramis strictis subsimplicibus, dense fibrillosis; apotheciis magnis terminalibus peltatis.

Hab. Madhari, Kumaon, alt. 8700 feet; Sagtia deo Pass, Garhwál, alt. 11,500 feet.

Branches springing from the base, very stiff, erect, about three inches high, scarcely branched, except towards the summit, where they are forked, and sometimes twice or more subdivided with very short stiff branchlets. Branches and branchlets densely covered with fibres. Apothecia large, terminal on the branches and forks, at first flat, strongly margined, at length reflexed, subimmarginate. *S. subsimplex*, Mont.! MSS. (Ins. Mascaren.) according to an authentic specimen, which I owe to Dr. Montagne, has very small lateral apothecia, but seems, so far as can be judged from a fragment, to be in other respects very similar.

36. Cladonia *pyxidata*, Fries.

Hab. Pindari glacier, Kumaon, alt. 12,000 feet.

Cups very short, granular; thallus rather large, brown. This form is the *C. pocillum*, Ach.! *C. neglecta*, Fl.

37. Cladonia *vermicularis*, var. *taurica*, Ach.

Hab. Bompras, Garhwál, alt. 16,000 feet.

The present specimens are probably dealbated forms of *C. gracilis*, var. *hybrida*, Fries.

38. Cladonia *perfoliata ?* Florke.

Hab. Fragments of this species (as it appears), which Wallich likewise collected in Nepal, accompany *Parm. leucomela*, Ach. (Coll. n. 22 pr. p.)

39. Umbilicaria *depressa*? Schær.!

Hab. Pindari glacier, Kumaon, 12,000 feet above the sea, accompanied by fragments of moss, grass, and sand; barren. (Coll. n. 2.)

The thallus agrees exactly with Swiss specimens, but as there are no perfect apothecia the determination of the species is very doubtful. Thallus in these specimens at first submembranaceous, flexible, pulverulent, at length becoming exceedingly thick and then papillated; colour that of *Endocarpon miniatum* precisely, both when wet and dry; underside black, more or less scabrid and shaggy, with very short soft black hairs, which at length become thick and branched, about one-tenth of an inch long and irregularly tufted, leaving parts of the underside bare, especially about the umbilicus, and then somewhat resembling a minute black moss clothing the under surface interruptedly. The abortive apothecia much resemble the fructification of *Endocarpon miniatum*, and incline to be sunk in the thallus; those on a Swiss specimen of *U. depressa* present a precisely similar appearance. The few specimens in my herbarium of *U. vellea*, Ach., and *U. Dillenii*, Tuckerm., agree less well with the Indian plant, than those of *U. depressa* do.

40. Biatora *Himalayana*, Bab.; thallo effigurato squamato crassissimo opaco rufo-brunneo, squamis liberis pulposis granulatis flexuosis albo-marginatis, subtus spongiosis pallidis sparsim fibrillosis; apotheciis squamarum centro insidentibus globosis nigris subimmarginatis subconfluentibus disco intus pallido hypothecio albido, margine obscuro tenuissimo evanescente.

HAB. Gori River, Kumaon; on earth; alt. 4700 feet. (Coll. n. 5.)

Allied to *B. globifera* and *B. lurida*, but very distinct. Young scales orbicular, appressed, margined with white, resembling the apothecia of a lichen, brown when dry, pale ferruginous when moistened, bearing, even in a very early state, a central apothecium. Thallus more or less green, darker in age and ferruginous; scales confluent, very opake, pulpy, granulated and cracked; margins free, more or less distinctly edged with white; underside spongy, pale ferruginous, passing into the colour of the still paler margin, naked or with a few minute fibres. Apothecia irregular, more or less globose, greenish when moistened and pellucid, scarcely margined even in a very young state; sometimes there are traces of a very thin margin. Disc pale waxy within, becoming darker when moistened, placed on a thick whitish medullary stratum. The only ascus which presented itself was obovate pyriform, not very regular in shape (cf. ascus of *Endocarpon Moulinsii*, Mont., figured in Ann. des Sc. t. xx. (2de sér.) fig. 16 *f.*), enclosing eight oblong sporidia, which appeared to have a septum. Paraphyses abundant, bearing a coloured fluid at their upper extremity. Probably the species spreads over the earth in large patches, but the collection contains only one specimen about two inches in diameter, and a fragment.

41. Lecidea *Armeniaca*, Ach.

HAB. A minute fertile specimen accompanies *Parm. oreina*, Ach., from Shelong, Kumaon; alt. 13,000 feet. (Coll. n. 31 pr. p.)

42. Lecidea *geographica*, Ach.

HAB. A morsel from Shelong, Kumaon, alt. 13,000 feet.

Two other *Lecideæ* from the same locality and altitude occur in the collection: the hypothallus is invisible in both of them. One species, a good deal resembling *Parm. glaucomma*, Ach., appears to be *L. glacialis*, Fries; the other is probably one of the infinite forms of *L. sabuletorum*, Fries, and resembles his var. *coniops*, which I believe to be identical with *L. scabra*, Tayl.! The apothecia are confluent and dark within.

42. Collema *saturninum*, Ach.

HAB. Chinar, Kumaon, alt. 8700 feet, fertile; growing on *Sticta pulmonacea*. (The usual form, glaucous. Coll. n. 10.) Madhari Pass, Kumaon, alt. 8200 feet; on rocks in a stream; fertile. (Thallus becoming dark, with a rufous tinge. Coll. n. 18.)

43. Collema *nigrescens*, Ach.

HAB. A barren fragment accompanies *P. tiliacea*, Chinar, Kumaon, alt. 8700 feet. (Coll. n. 19 pr. p.)

44. Collema *tremelloides*, Ach.

HAB. Fragments without fruit, belonging apparently to this species, accompany *Parm. cirrhata*, Fries. Chinar, Kumaon. (Coll. n. 22 pr. p.)

BOTANICAL INFORMATION.

The Linnean Herbarium.

(*Continued from p.* 220.)

Besides naming the specimens, Linneus has frequently added various remarks, such as the locality, diagnoses, descriptions and quotations. The locality is commonly written close to and symmetrically under the bottom of the specimen. The commonest are H. U. (Hortus Upsaliensis), C. B. S. (Caput Bonæ Spei), *India*, *Ind. occ.*, *Am.*, *Islandia*, *Siberia*; and among Swedish provinces, *Gotl.*, *Scania*, *Lappo*, this last not rarely followed by *S.* or *Sol.* (Solander). Of Botanists, *K.* (Kalm), *Br.* (Browne), occur most frequently; Osbeck and Rosén occasionally: seldom with locality added. To these indications of donors must be added the very doubtful mark *Sp.* invariably followed by a number, which does not refer to the page in the 'Species Plantarum,' as one would suppose, but perhaps means Sparrman. Very frequently one of the signs Θ, Э, Є, is added to the specific name, or by itself; no one has been able to point out their meaning, for they indicate neither locality, donor, nor duration of the plant; though Э only occurs on Siberian plants. All Lœfling's Spanish plants are marked *Hisp. Lœf.* followed by a number written on the back of the paper; where are also added the diagnoses and descriptions in Linneus's own hand, occasionally the same as in Spec. Plantar., Flora Suecica, or his other works; though occasionally of older date, and afterwards abridged in his publications. There are likewise occasional quotations from the works of other authors, particularly Gmelin's, and also Ray's, Scheuchzer's, and others. The original of the figures in the 'Flora Lapponica,' are often found among the specimens; indeed most of the plants referring to it, especially the *Salices*, have on the side a number referring to that work. Other notes, not Linneus's, may be referred to two different epochs; one of these comprises slips of paper accompanying the specimens which were sent to Linneus, with names of older authors, or new names proposed, or some question propounded; to these Linneus has occasionally subjoined a remark. The other epoch is more recent and originates almost entirely with Sir J. E. Smith, in which case they are designated *J. E. S.*; they consist of orthographic corrections, the addition of names where they were wanting, some reference to Sir Joseph Banks's or Leche's herbarium, some locality in England, or the opinion of other botanists, especially Afzelius, etc.

With respect to the specimens themselves, they have generally not been so well selected or preserved as is commonly the case now-a-days, though they are rarely in such bad condition as to be entirely unfit to afford useful information; but, with these exceptions, there is scarcely one single instance to be found in the whole herbarium of any injury from age or careless handling, those universal sources of mischief in such collections. In fact, so carefully and anxiously have these treasures been attended to, that there can be no doubt that they are at this present time precisely in the same condition as they were in the possession of Linneus and Sir J. E. Smith. The current supposition, that only a small proportion of the specimens were gathered by Linneus himself, is fully corroborated by this recent examination.

It was not to be expected that all the plants described by Linneus were to be found in his herbarium. Nevertheless only few genera, and those poor in species, are wanting. Not so as regards species, particularly among extensive genera; and this applies even to Swedish plants, with the additional inconvenience, that some of these are certainly of foreign locality, or at least doubtfully of Swedish origin. The consequence is, that it is sometimes impossible to decide with certainty from the herbarium upon a questionable geographical proposition. Thus, *Sium nodiflorum* is mentioned in 'Flora Suecica' as having been found at Christianstad by Rosén alone; but as the plant has never since been seen there, a mistake was supposed to have occurred either in the name or the locality. In the herbarium there is a specimen of the plant from abroad, and also another exactly corresponding in all respects as to species, but having unfortunately no sort of indication to prove that it was gathered at Christianstad.

(*To be continued.*)

NOTICES OF BOOKS.

PLANTÆ JAVANICÆ RARIORES, *descriptæ et Iconibus illustratæ, quas in Insula Java annis* 1802–1818 *legit et investigavit* THOMAS HORSFIELD, M.D.; *e siccis Descriptiones et Characteres plurimarum elaboravit* JOHANNES J. BENNETT; *observationes structuram et affinitates præsertim respicientes passim adjecit* ROBERTUS BROWN. Fasc. 4.

The first three fasciculi of this learned and important work have long been before the public, to the great advantage of the botanical world: Fasc. 1 having appeared in 1838, Fasc. 2 in 1840, Fasc. 3 in 1844; Fasc. 4, and we regret to say, the last, completing a volume, is now before us. Besides the labours of Messrs. Brown and Bennett, Dr. Horsfield himself has given, in connection with a map of the island, a "Geographical Preface," noticing the geological structure, the soil, course of the rivers, etc., concluding with the "geographical divisions of Java, and localities visited." This is followed by a "Postscript," in which are detailed the circumstances which led to that gentleman's researches in Java, and to the formation of the herbarium consisting of 2196 species. Due acknowledgments are given to Messrs. Brown and Bennett for their invaluable and disinterested labours, in elaborating the materials of the present work. The previous portions in all contained forty-five plates. The forty-sixth plate, the first of the new fasciculus, is devoted to *Acanthophora fragrans*, Wall. The genus is referred by Mr. Brown to *Tiliaceæ* rather than to *Buttneriaceæ* as originally defined by that author; but this distinguished botanist observes that these two families pass into each other.—Tab. 47, *Sarcostigma* (Wight et Arn.) *Horsfieldii*, Br.—Tab. 48, *Jodes ovalis*, Bl., here referred by Mr. Brown to *Phytocreneæ*, Arn. (along with *Phytocrene*, Wall., *Nansiatum*, Buch., Ham., *Miquelia*, Meisn., *Jenkinsia*, Griff., and as "Phytocreneis affine genus," *Pyrenacantha*, Hook.)—Tab. 49, *Cardiopteris lobata*, Wall. (C. Javanica, *Br.*, Peripterygium quinquelobum, *Hassk*.), a remarkable Javanese climbing annual, with fruit at first sight resembling *Dioscorea*, whose natural affinities have been a subject much discussed of late. Mr. Brown considers it "an isolated genus or family, to be placed at no great distance from *Phytocreneæ*."—Tab. 50, *Bennettia Javanica*, Br. This new genus of Mr. Brown has been, with his permission, adopted by Dr. Blume, and by Dr. Wallich (Cat. of E. Ind. Pl.), who has distributed six Malayan species distinct from the present one. It bears the same relation to *Antidesmeæ*, which the polypetalous genera in *Euphorbiaceæ* bear to the apetalous ones of that family.

De Vriese, W. H., Dr. and Professor: *Descriptions et Figures des Plantes nouvelles et rares du Jardin Botanique de l'Université de Leide et des principaux Jardins du Royaume des Pays Bas.* Livr. 2. Leyden. Large folio. Five highly-finished and coloured Plates.

This is a work of luxury and of science. We had formerly occasion to notice the first fasciculus, and we have now the pleasure of announcing a second, rivalling, if not surpassing, the former in the beauty and fidelity of the plates. The two first plates and description are devoted to *Cycas Rumphii*, Miq. (C. circinalis, *Roxb.*), the species figured in Rumph. Herb. Amb. vol. i. t. 22 and 23, and which is thus distinguished :—" *C.* frondium stipite terete spinuloso; foliis lanceolato-elongato-linearibus, rigido-acuminatis, subfalcatis; cono masculino cylindrico, pedicellato; squamis in parte antherifera cuneatis, apice nudo triangulari breviore acumine nonnunquam caduco instructis, externe fulvo-tomentosis; foliis carpellaribus 3-5-ovulatis, lamina rhombea cristato-serrata, ovulis glabris (vel hic illic lanatis, *Rumph.*)." One plate represents the plant reduced, with male spike; a portion of the leaf, *nat. size*, etc. The second plate, the male cone, *nat. size.* Two other plates, with ample description, are devoted to the true *C. circinalis*, Linn., Hook. Bot. Mag. (excl. syn. Rumph.), etc. The figures exhibit admirable analyses both of the male and female cones, flowers, and fruit, and of the organization of the stem. The remaining plate represents *Hymenocallis Borskiana*, De Vriese, a new Amaryllidaceous plant.

TULASNE, LUDOV.-RENATI: MONOGRAPHIA PODOSTEMACEARUM; *accesserunt Tabulæ tredecim, sumptibus Hug. Weddeli pictæ, et quod ad Icones analyticas attinet Carolo Tulasne, D.M., adumbratæ.* 4to. Paris.

We have already noticed the Prodromus of this important volume. To the brief character of that Synopsis are here added full generic and specific descriptions and remarks, so as to justify the title of a "Monograph;" and the Organography of these curious Vegetables is not the least valuable portion of the publication. "Podostemaceæ," writes M. Tulasne, "nulla excepta, plantis herbaceis adnumerantur, plurimæ humillimæ acaules aut subacaules. Vigent omnes sub aquis demersæ dulcibus, saxis vel truncis arborum ripariis inundatis hærentes; amant aliæ rivulos leni cursu fluentes, quorum in undis molliter versantur, aliæ nusquam nisi in aquis desultantibus et fluviorum cataractis, absque intermissu fluctu æstuante vel alternatim blandiori jactatæ occurrunt. Loca ideo aditu difficillima pleraque incolunt, et si ad earum staturam vulgo mediocrem, habitum sæpissime bryaceum vel Lichenum formam usurpantem, necnon ad frequens florum indecus attendantur, minus erit mirandum cur tamdiu horum qui vegetabilium indagationi student, oculos effugerunt, adeoque paucæ etiam nunc in botanicis servantur musæis."—We should say that the habit of the fronds rather resembles the *Hepaticæ*, or the *Algæ*, than either the Lichens or Mosses. Some are quite Ulvoid, and there is as great a variety in the fructification as in the herbage. All this is beautifully represented in the accompanying plates, which are models of botanical design and botanical analysis. Two new genera are given in the Supplement, *Lonchostephus* and *Monostylis*, making twenty-one in all.

Notice of an Excursion in the Zulu Country; by MR. R. W. PLANT*, Naturalist. (*Communicated by* Mr. Stevens.)

Having forwarded the principal and heaviest portion of our luggage, such as provisions, boxes, paper, and ammunition, from Natal, by the wagon, we started on ox-back; pack-oxen entirely superseding horses for coast travelling, the frequently excessive heat and sour pasturage proving fatal to the latter. The usual equipage is one ox to ride and another, or sumpter-ox, to carry blankets and other necessaries for each person; and it is a matter of some moment to secure native or thoroughly acclimatized oxen, for should one or other of these two fail, there only remains one of the two alternatives, either to walk the rest of the journey or abandon the least valuable of the baggage.

At the Umvoti I got all the information possible of our intended route; and as this is the last mission station in the colony, on leaving it we bid adieu to civilization *in toto*. Two days brought us to the Tugella, the confines of the colony, and as the country wore a promising aspect I determined on staying a short time, both to rest the oxen and obtain an opportunity of looking into the flora. The country here, as in every other part, is hilly, but being well wooded the acclivities do not seem so great. The principal wood consists of two or three species of *Mimosa*, *Assagai*, and bastard Stinkwood; in the ravines, which are here numerous, many other trees and bushes are found; one of the latter, bearing no distant likeness to a *Laurustinus*, was blooming profusely and scented the air for many yards with its delicious aroma. A pretty pure white *Crocus* (?) ornamented the ground in patches, and large beds of *Gazania unicolor* were frequent. *Ipomœa Nil*, or a species very like it, occurred often among the bushes, and pendent tufts of two *Lycopodia* were now and then seen hanging from the tops of trees. The river Tugella is a wide stream, and when full in the rainy season must present a formidable barrier; where we crossed there was about five or six hundred yards' width of water, but the banks must be near a mile apart, the intervening space being sand. We had been here four days and were just becoming interested in the place, when going one evening towards the river for the purpose of shooting Ibis for dinner next day, I made my first acquaintance with the monarch of the forests—a lion was crouching within a few yards of my path: with nothing but small shot in the gun, I knew that the least hesitation might prove serious. This intelligence rendered a move next day indispensable, or the loss of an ox or two would be the probable result. Consequently next morning we entered the Zulu country. We had now about eighty miles before us entirely uninhabited, and as the objects of my journey were not likely to be met with on the road-side, it became improbable that we should fall in with any party of traders. Great care was necessary to keep an accurate account of our course and to guard against any waste of provisions, for Kaffirs are the most improvident people I ever met with. They will continue eating while a morsel remains, though there was a certainty of starving the next day. They can however go without food for an amazing length of time, and, unlike most other savages, are not passionately fond of intoxicating drinks: a miserly cupidity is their ruling passion; they will drink anything given them, but they buy none. I have often seen them drink vinegar and water under the name of "Jualo" (Kaffir-grog), with all the gusto imaginable—it costs nothing.

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* See notice of Mr. R. W. Plant's mission to Natal at p. 223 of the present volume. His brother, Mr. N. Plant, is gone on a similar Natural History mission to South America, as announced in our vol. iii. p. 125.

On entering this range of country my intention was to proceed through it, as near to the sea as possible; and, from its general character and the fact that few if any had ever gone over it before, I had great expectations of meeting with new things. A few, very few nights' experience showed this route to be impracticable. The number of hyenas and tigers seemed to increase with each march, until they grew so bold that our fires would not keep them off, and three or four volleys were often necessary to drive them back. We therefore retraced our steps to the road, and the passage of two or three minor rivers brought us to the Umlilassi, a noble stream, and decidedly the largest I have yet seen. From its size and proximity to the sea, we supposed it to be a tidal river, but night approaching, and wood being scarce on our side, we determined to push over at once. My sumpter-ox refused to take the water; not all the blows or jabbering of the Kaffirs could induce him to enter. It came on a cold rain, and as the rest were across, there was nothing left but to unload and lead him over in the middle of the stream. The water was breast high; the ox grew frightened, and with a plunge was bearing his leader off down the stream to the sea, so that the loss of both man and ox seemed inevitable, and to wade after them could not be done quick enough even if the depth of water would allow it. I was but a poor swimmer before I arrived in this colony, but my practice since proved of essential benefit in this instance; a few rapid strokes brought me before them, and by dint of shouting we got the ox round. The poor fellow who took the lead was nearly exhausted, being as often under water as above it, in consequence of the thong by which he had hold of the ox becoming entangled round his wrist. During this time the rain had come on heavily, wetting everything, and on coming to drink our coffee we found the water was salt;—so that this was the most cheerless night (with one single exception) I spent on the journey. Sleep was out of the question: we were close to the river and the sea-cows kept up a bellowing all night. The passage of this river was indeed most disastrous, and we had two days' journey before we should arrive at the place appointed for the wagon to leave our first lot of provisions; luckily the next day afforded us a good supply of meat, antelopes of two or three kinds being plentiful; the largest, or "Eiland," is certainly the most graceful animal I know in this part of the world, and its flesh is the best eating of all the wild meats.

The country here began to assume a bolder appearance, the hills larger, backed in the distance by a range of mountains which we were evidently approaching, little or no bush on the left hand, while towards the sea the trees were gathered into dense forests. On the hills around us, whole acres of blue, pink, white, and yellow flowers occurred every mile or two, either in detached beds or mingled together in the most pleasing confusion. The Fan-palms, which in Natal are but miserable stunted things, are here seen in native magnificence. Of the herbaceous plants, I may mention a large white *Aster*, two or three bright-yellow *Genista*-like dwarf plants, a very pretty little purple *Polygala*, a very dwarf deep blue and red *Cynoglossum*, the *Gazania* before named, and a larger one, several species of *Asclepias*, *Gladiolus psittacinus*, and a green variety of the same, the dwarf hispid *Thunbergia*, a large white *Linaria*, two or three terrestrial Orchids, one of them remarkable for its large chocolate-brown and yellow flowers, fully equal to the majority of *Epidendrums*, three or four *Gnaphaliums*, and a very fine white *Hyoscyamus*.

In the afternoon of the second day from the Umlilassi, we crossed the Umsatense, and at night arrived at our expected depôt; great indeed was our astonishment and disappointment to find the wagon had passed on and left us nothing. We however procured mealies, milk, and a goat from the Zulu kraal, with which we pushed on, the country hereabouts offering but little inducement to stop. Proceeding over a comparatively level country, in the forenoon of the second day again we were somewhat startled by the sound of a gong, apparently two or three miles off, and on observation noticed the Zulus collecting on all sides towards the sound; a winding track brought us suddenly in sight of an erection which in that position caused no little surprise—it was evidently of corrugated iron; to determine the matter we advanced, and found it a Mission Station, and to our still greater surprise found it was Sunday morning (we had lost a whole day in our reckoning) and that service was just commencing. We unloaded and took our seats on the ground in the midst of some two hundred Zulus, who were here collected by M. Schroeder, a zealous missionary, who alone in the midst of this fickle people, and far from the support of civilization, maintains a position in the good-will of those by whom he is surrounded. We were hospitably entertained by him in the afternoon, and after forcing upon us some acceptable presents and giving us much valuable information as to our proposed route, we left him in the evening, wending our way again towards the sea. As our wagon was now far ahead of us it was thought inadvisable to continue the pursuit of it for the present, but rather to set to work at once and trust to such supplies as could be drawn from the kraals around us. Moreover our oxen required rest, and I longed to be getting my collection together. A day and a half brought us into a thickly wooded district nearly mid-way between the Umsatense and the Umgoa, and here two oxen were soon loaded and despatched homewards.

Strange as it may seem, I could not tempt natives to assist me in any way towards gathering insects, shells, etc.; they would not or could not conceive any man so foolish as to give away such valuable articles as beads, etc., for the mere trash that I wanted. In natural disposition there seems little difference between these people and the Kaffirs; they are equally well made, light, active and vigorous when roused, but naturally prone to indolence; they set no value on time, and having nothing to care for except their cattle, do not wish to sell their lazy independence for the wages of a white man's servitude. A sense of past favours I am persuaded hardly exists among them, and either fear or the prospect of an advantage is the only motive to exertion. Like the

Kaffirs they are mean, overreaching, and avaricious, yet they are honest and temperate; the females do all the work of the kraal, except attendance on the cattle; the young ones are many of them handsome, but in age they become wrinkled and abominably ugly. In person they are clean and fond of ornaments, but in many habits they are excessively dirty. They make extremely neat baskets, and earthen pots to cook in; but the latter are clumsy things. Their own Assagais and ornaments for the person, such as collars of beads, snuff-boxes, etc., are also the work of their own hands; nor must I omit a three-legged stool for a pillow (cut out of solid wood), and the snuff-spoon, generally of bone; it has three long teeth like a fork, to serve as a handle, and to fasten it in their woolly hair; the opposite extremity is furnished with a small bowl like that of a salt-spoon, and with it they shovel up snuff by the handful, and perform all other necessary operations about the olfactory organ.

The district lying between the Umsatense and the Umgoa on the coast is very thickly populated; large quantities of Indian corn, sweet potatoes, tobacco, and Kaffir corn (a kind of millet) are grown for their own consumption. The Indian corn is broken in a kind of rough mortar, boiled and eaten with curdled sour milk. This is the staple food of the natives; to a European it is at first intolerable, but on acquaintance it becomes palatable, and indeed grateful in the overpowering heat felt in the middle of the day. Of the Kaffir corn they make a black bread, by grinding it between two stones and baking it on the ashes without leaven; and from the same corn brew a sharp, sour, and intoxicating beverage called "jualo;" this corn, by distillation, yields a spirit very like the common brandy of the Cape. A sweet Rush is also found on the banks of the streams, and eaten raw or boiled to sweeten their meals; and a small Labiate plant is cultivated to use as tobacco —this is probably a *Plectranthus*.

The trees here assume a majestic stature, and many new forms are apparent. The *Mimosa* and Stinkwood are still prevalent; the Fan-palms are more frequent than before, and often attain a height of fifty or sixty feet, bearing fruit in abundance; two or three species of *Ficus* occur at intervals, and are usually very grotesque in appearance; *Strelitzias* are scarce. But herbaceous plants are in great variety, and several new forms exist. I may mention the following genera as most prevalent: *Commelina*, *Justicia*, *Sparaxis* (several new ones), *Tritonia* (three species) wherever there are swamps, *Gladiolus* occasionally, *Chironia*, *Campanula*, *Lobelia*, *Rhus*, *Veltheima*, *Ornithogalum*, *Asparagus* (two beautiful kinds), *Aponogeton* in all the small streams, *Gnidia* (rarely), *Schottia*, *Oxalis* (frequent), *Hibiscus*, *Indigofera*, *Senecio* and *Cineraria*. The terrestrial Orchids deserve more than a passing remark: they are numerous and very beautiful; in my opinion there are many here but little inferior to the most showy of the epiphytous kinds. I shall take care to forward a good parcel of roots, and then perhaps cultivators may have an opportunity of judging for themselves. In the meantime a description, however faint, may induce some to give them the attention they so well merit. Fancy then a plant with the general characteristics of an *Ophrys*, producing a spike of flowers as large and as thickly-set as those of *Saccolabium guttatum;* often indeed measuring two feet in length, of a bright salmon-colour intermixed with as bright a yellow. Another with plaited foliage and a nodding head of some twenty bright yellow blossoms, having a deep stain of crimson on the cucullate lip, in the manner and of the size of a *Dendrobium*. Again, a species with fleshy persistent leaves and an erect stem of about two feet, supporting from fifteen to thirty large yellow flowers, the lip blotched and lined with pale purple, bearing the aspect of some robust *Epidendrum;* and others whose white and pink blossoms at a little distance are easily mistaken for Hyacinths. Mingled with these is often found a plant not less curious or beautiful, which I imagine to be an *Orobanche* (*Harveya Capensis*, Hook. Ic. Plant. t. 118): its habits agree exactly with that parasite; it produces a flower-stem of about a foot in length, bearing five or six very large pure white flowers, averaging about three inches in diameter; it is usually found adhering to a thistle.

With regard to the culture of African terrestrial Orchids I would observe that the soil I fancy the nighest approach to their native medium will be found in the black alluvial mould of marshes or water-meadows, tempered with pure sand, which enters largely into the composition of all the soils here, where we have nothing like the peat-soil of England, nor is there much decaying vegetable matter present where these Orchids are usually found. All those from the coast are subject to a long period of drought; and unless specially marked as the inhabitants of swamps, this fact will have to be borne in mind. The dry season commonly extends from April to October, and for two months towards the end of this period they may be said to be perfectly dry, and being in most cases but just beneath the surface would be subject to extreme aridity were it not for the shelter afforded by the thick vegetation of herbs and grasses by which they are surrounded.

In October the rains begin at first but sparingly, dews however are frequent and heavy, and in November and December the ground becomes saturated; January and part of February dry weather usually prevails, to be succeeded by even more rain than before. Most of the terrestrial Orchids bloom at the beginning of each of these rainy periods, and by the end of May the leaves of such as are deciduous wither and die off. The mean temperature need not be high for them, as I frequently find the coast plants running back to an elevation of two or even three thousand feet, and at this height sharp frosts are very common in our winter season. I fancy that greenhouse treatment, with the help of a close frame at the commencement of their growth, will prove all that is needed, and to keep them rather *less* dry than is usual with bulbs, during the torpid season.

After despatching the two oxen before mentioned we crossed the Umgoa and found the country more thickly wooded than before; trees of a gigantic size being frequent, and the bush of several days' journey through. The *Bulimus Kraussi* is here common, and a darker one, which I think differs essentially, is also tolerably plentiful. After a few days I found but little difference in the vegetation, and therefore pushed on, crossing the Umpongo, whence three or four days' travelling made an immense difference in the aspect of the country. It here becomes flat, so much so that lagoons are frequent and the bush is scattered about in detached patches. Epiphytal Orchids are decidedly on the increase, and if we can push some fifty miles further I think it probable some new forms in the family must result; but unfortunately our oxen show unmistakeable symptoms of wearing out. We have now a good load, quite as much as they can get on with.

Leaving the cattle on the Umpongo to rest and refresh themselves, with two Kaffirs to take care of our effects, I set off to determine if possible the extent of this flat country, taking with me the rest of the Kaffirs to carry necessaries. Three days brought us to another considerable stream, and two more to the head of St. Lucia's Bay. At starting I promised myself to reach this place, as I had heard some glowing accounts of the scenery, etc., and certainly it is not belied by the reality: the bay itself is about the size of that at Natal; the entrance is almost stopped by a bar, so much so that it is quite possible to wade across the mouth.

The country falls back gradually to the highlands apparently some thirty or forty miles distant; the intervening lands being either level or a very gradual slope. There is plenty of wood, but it is not so dense as near the Umgoa: the herbage is very rank, and the weather extremely hot and moist. Elephants seem in great plenty all over this district, as we frequently saw herds of them. There are but few inhabitants of this part, which argues but little for its healthiness, although the sea-breezes seem to temper the extreme heat in a very agreeable manner. Orchids, as I expected, are on the increase, and I feel extremely vexed at having to stop short where the objects of the journey seem to be increasing; but as the oxen do not come up, I can only suspect they are not improving in condition, and therefore the sooner we get them back to cooler latitudes the better. Some very handsome shells have rewarded two days' toil on the sea-coast, and with them we start back again tomorrow for the oxen. Somehow it seems impossible to keep a correct reckoning of the time. I have quite lost every idea of what day it is; but as the Kaffirs tell me we have been out nearly three months this must be about the beginning of September, and as the rains will shortly be setting in it will be good judgment to get over some of the larger rivers before they are too much swollen. Adieu, then, to the Bay of St. Lucia.

On our arrival at the place where the oxen were left, I was grieved to find one dead and two others more sickly than when we parted; it became therefore necessary to abandon the least valuable of our collections, and, selecting such as could be procured nearest home, we loaded the remaining beasts. Despatching two more homewards with directions to look for the wagon, and if they fell in with it to leave the luggage and return to a rendezvous appointed; or otherwise, to make the best of their way to Natal; while with the remainder I followed the route to the hills. This we accomplished in a fortnight, and the relief from the oppressive heat of the coast was most seasonable both to men and beasts. I was induced to take this course as I wished if possible to catch the spring season on the highlands, and with the summer before me I could return gradually towards Natal. But while we had been quietly at work in Nature's laboratory, different was the occupation of our neighbours. We found on attaining the populated part of the country that a sanguinary war was raging between Pandu and some of the tribes on his frontier next the Drachenberg; we were unconsciously involved in the midst of the contending parties before we become aware of it; and now a second abandoning of the precious subjects of so much toil was pressingly necessary; but as I do not wish to dwell on this subject, suffice it to say that by dint of much skulking and some tact we got through with the loss of another ox (which we had to kill and eat), almost as empty-handed as when we entered the country. The fate of the two oxen previously started homewards also caused some alarm. The heaviest loss at this unfortunate crisis I estimate to be the insects, for as we had entered the Zulu country in the middle of winter, it was only at the latter end of the journey that I was able to make any additions of the least consequence; therefore all the best were with us at the time we were obliged to think only of saving our lives. We were, however, no sooner fairly clear of the belligerents than we set to work again, and as nothing else offered I had soon a goodly collection of bulbs, which are here both numerous and beautiful*.

As we had crossed the Umpongo, and, to get up the most accessible way from the coast to the hills, were obliged to double the head of St. Lucia's Bay, I compute our most distant point on the Drachenberg range to have been about 27°, and the average altitude at which we made collections about 5000 feet: higher than this it was useless to go, for nearly all the time we spent in this we experienced sharp frosts at night, and in the day were often so completely enveloped in clouds that it was dangerous to venture far from camp; besides which, lions are here so numerous as to be a source of continual anxiety. Pursuing our way as rapidly as the ruggedness of the country would permit, we at length fell in with some natives, and from them learned we were near the source of the Tuzella and within a hundred miles of Pietermaritzburg. This lightened our spirits, which were by this time beginning somewhat to flag, and a seasonable supply of mealies and milk did quite as much for our bodies. I continued with the baggage till we came once more upon a high road, and then we made the best of the way homewards.

February 27th, 1852.—Have heard of the party left on the hills; they are stopped by the waters. Of those in the Zulu country I can hear nothing.

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* These have arrived in England, and have been consigned to Mr. Samuel Stevens, 24, Bloomsbury Square, London, for sale. A set of them is now in cultivation at the Royal Gardens.

Characters of some South-west Australian COMPOSITÆ, *principally of the Subtribe* GNAPHALIEÆ; *by* DR. ASA GRAY.

(*Continued from p.* 232.)

PTEROPOGON, *DC. Prodr. v.* 6. *p.* 245, *non Nees!*

Char. Gen. Reform.—*Capitulum* 3–12-florum (raro 15–40-florum), homogamum; nempe floribus omnibus tubulosis hermaphroditis, sed paucis centralibus ovario inani sterilibus. *Involucrum* cylindraceum vel oblongum, pauci-pluriseriale; squamis scariosis glabris conniventibus, inappendiculatis, seu intimis lamina petaloidea brevi superatis. *Receptaculum* angustum, planum, epaleaceum. *Corollæ* tubulosæ, 5-dentatæ, rarius 3–4-dentatæ. *Antheræ* basi caudatæ. *Styli* rami apice truncati v. capitellati. *Achenia* turbinata vel oblonga, erostria, sæpissime sericeo-villosissima; sterilia inania. *Pappus* uniserialis, setis rigidiusculis distinctis vel ima basi concretis conferte plumosis.—Herbæ annuæ Novæ Hollandiæ austro-occidentales; foliis filiformibus vel linearibus, infimis oppositis, cæteris alternis; capitulis corymbosis vel subfasciculatis, sæpius fuscis, parvis vel parvulis.

This genus, established by De Candolle on a single species, with very few-flowered capitula, to which a second, in some respects different, has lately been added by Steetz, required to have its character not only corrected, as to the structure of the flowers, but considerably widened, so that it may include several additional species which I find in the Hookerian Herbarium. It will not retain however the Chilian plant, which C. A. Meyer and Nees von Esenbeck, misled by De Candolle's having erroneously described the fertile flowers as "fœmineis," have referred to *Pteropogon*, Nees von Esenbeck giving at the same time a revised generic character grounded on this mistake*. This Chilian plant is evidently the *Facelis apiculata*, Cass.; which genus I perceive that M. Remy (in Ann. Sci. Nat. for Sept. 1849) has referred to the *Gnaphalieæ*, apparently with good reason. The plants of my third section prove that Steetz has correctly referred his *Pteropogon spicatus* to this genus, and likewise justify me in appending the § IV. for a plant which has quite the habit of *P. pygmæus*, notwithstanding the more numerous flowers and glabrous achenia. The fifth section tends to connect *Pteropogon* with *Xyridanthe*, Lindl., which has larger heads

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* *Pteropogon Chilensis*, Meyer, Ind. Sem. Hort. Petrop. vol. vi. (1839); Nees in Linnæa, vol. xvi. p. 223. *P. Andicola*, Nees, Ind. Sem. Hort. Vratisl. 1841.

and a more rigid (and *not biserial*) pappus, and which on the other hand seems to be scarcely more than a section of *Helipterum*, as established by De Candolle. But my *P. gracilis* is surely not generically distinct from *P. pygmæus*, nor dissimilar in habit; and *P. ramosus* is very closely allied to it, notwithstanding its larger and radiant involucral appendages. I have been obliged therefore to dispose the species known to me as follows.

§ I. FACELIOIDES. Capitulum 3–5-florum parvulum, intra folia involucrantia sessilia. Achenia fertilia villis sericeis confertissimis tecta, superioribus achenio longioribus et pappum exteriorem simulantibus; sterilia glabra vel parce villosa. Pappus corolla brevissime 5-dentata multo longior, albus.—Nanæ, capitulis paucis corymboso-congestis.

1. P. *pygmæus* (DC. l. c.): involucri fusci squamis intimis appendice lactea ovata perspicua superatis; foliis filiformi-linearibus arenoso-pubescentibus demum glabratis, floralibus capitulo dimidio brevioribus.

P. *australis*, Nees in Linnæa, vol. xvi. p. 223.

Interior of Eastern Australia, at Molle's Plains, *A. Cunningham*, and Bathurst Plains, *Fraser*.—Heads 3 lines long, brown, the innermost scales of the involucre tipped with a small but conspicuous petaloid appendage. Fertile flowers two or three; the sterile from one to three; both hermaphrodite, and of the same structure, except that the style is perhaps more developed in the former and the anthers in the latter. As to position, in this and other species, the infertile flowers are as frequently exterior as central. There are commonly two infertile flowers: one of them has the abortive ovary perfectly glabrous, the other is usually sparsely villous. These have a pappus of fewer and smaller rays than the fertile flowers. Pappus of the fertile achenia of twenty to thirty rather stout bristles, densely plumose throughout, twice the length of the corolla, thrice the length of the turbinate achenia.

2. P. *Drummondii* (n. sp.): involucri albido-viriduli vix fuscescentis squamis intimis appendice minima apiculatis; foliis glabratis, floralibus capitulum subæquantibus.

Swan River, and interior of South-west Australia, *Drummond*, 1849. —Plant two inches high, very much resembling *P. pygmæus;* the character given above expresses the only difference. Fertile flowers two or three; the sterile one or two.

§ II. HELICHRYSOIDES. Capitulum 5–7-florum, parvum, basi nudum.

Achenia fertilia pilis longis sericeo-villosissima, sterilia glabra vel hirsutula. Pappus corolla superne ampliata 5-dentata (dentibus majusculis reflexis) pl. m. brevior.—Caules subpedales, capitulis multis subsessilibus glomeratis in spicam densam oblongam confertis.

3. P. *spicatus* (Steetz, Pl. Preiss. vol. i. p. 479): caulibus simplicibus erectis apice nudiusculis cum foliis filiformibus laxe cinereo-lanatis; involucri ovoidei squamis omnibus exappendiculatis, intimis flores vix æquantibus.—Var. *a* spica ovoidea vel clavata, basi capitulis infimis remotiusculis pl. m. interrupta, semipollicari vel pollicari. —Var. *β*, spica thrysoidea 2–3-pollicari basi laxa composita, capitulis rufo-fuscis, caule ultrapedali.

Swan River, (*Preiss*) *Drummond.*—The involucres in most of Drummond's specimens are straw-colour, the corollas of the same hue; in others with short spikes they are reddish-brown, nearly as deep as in var. *β*, in which the lobes of the corolla have turned brownish or blackish, as described by Steetz. Heads barely two lines long. Pappus whitish or fuscous, strongly and equally plumose, but with shorter hairs than in *P. pygmæus;* the setæ in the fertile flowers sixteen to twenty, a little shorter than the corolla, in the sterile about half its length.

§ III. ACHYROCLINOIDES. Capitulum 8–12-florum, parvum, basi nudum. Achenia parce hirsutula vel glabra, interdum omnia fertilia. Pappus corollam subæquans.—Caules ramosi, capitulis fere omnibus pedicellatis subfasciculatis in corymbum compositum dispositis.

4. P. *corymbosus* (n. sp.): foliis anguste linearibus a basi ad apicem sensim attenuatis planis cauleque corymbosi-ramoso laxe lanatis; capitulis brevissime pedicellatis; involucri fusci seu ferruginei squamis intimis breviter albido-appendiculatis.

Swan River, *Drummond.*—Darling Range, South-west Australia, *Collie.*—Stems a span to a foot high, leafy. Fascicles of the compound corymb 2–4-cephalous; the cylindraceous heads 2 lines long, slightly pedicellate. Petaloid tips of the innermost involucral scales nearly as conspicuous as in *P. pygmæus.* Corolla, etc., nearly as in *P. spicatus;* the pappus of twelve to fourteen setæ less strongly plumose.

5. P. *polycephalus* (n. sp.); foliis anguste linearibus planis a basi ad apicem attenuatis ramisque diffusis tenuiter araneosis demum glabratis; capitulis fastigiato-corymbosis longiuscule pedicellatis; involucri straminei squamis omnibus exappendiculatis.

Swan River, *Drummond.*—Resembles the foregoing, but is less woolly, the heads all conspicuously pedicellate, and the involucral scales are all destitute of petaloid tips.

6. P. *lævis* (n. sp.): foliis angustissime linearibus deorsum attenuatis inferioribus spathulato-linearibus ramisque simpliciusculis glaberrimis; capitulis pedicellatis in corymbis parvis confertis; involucri ferruginei squamis omnibus exappendiculatis.

Swan River, *Drummond*, 1843.—A span or less in height, from a slender annual root, entirely glabrous. Pappus, etc., as in the other species of this section. Corolla slender, not dilated above, and minutely five-toothed, as in the first section of the genus, about the length of the pappus. Achenia minutely hairy.

§ IV.? PTEROPOGONOPSIS. Capitulum 20–40-florum, parvum, intra folia bracteantia sessile, subheterogamum; nempe floribus exterioribus corolla angustiore brevissime 3–4-dentata, et antheris ut videtur cassis, interioribus corolla brevissime 4–5-dentata, centralibus substerilibus. Involucri squamæ paucæ, subæquales, tenues. Achenia glabra. Pappus corolla sublongior.

7. *P. demissus* (n. sp.): foliis filiformibus caulibusque ramosissimis depressis tenuiter pilosis nunc glabratis, floralibus capitulum ovatum æquantibus; involucri squamis inappendiculatis.

Swan River, *Drummond*.—Plant about an inch high, forming a depressed tuft. Heads subsolitary at the ends of the crowded branchlets, one line long. Involucre stramineous or ferruginous. Exterior flowers with an almost filiform corolla and with the anthers perhaps abortive, but always present. Pappus of about ten setæ, plumose as in the preceding section.

§ V.? HELIPTEROIDES. Capitulum 10–15-florum majusculum basi folioso-bracteolatum. Involucri squamæ pluriseriales, basi incrassatæ rigidæ, intimæ appendice petaloidea breviuscula radiantes. Achenia sericeo-villosissima conformia, pauca centralia subinania. Pappus breviter plumosus quam in § 1, corolla 5-dentata paulo longior.—Caules erecti, ultra-spithamæi, capitulis ad apicem ramorum solitariis vel ternis.

8. P. *gracilis* (n. sp.): glaberrimus, caule stricto superne parce ramoso oligocephalo; foliis filiformibus, summis capitulum bracteantibus; basi scarioso-dilatata appressa in squamis involucri ovati pluriserialis transeuntibus; appendicibus petaloideis squamis intimis duplo brevioribus lanceolatis.

Swan River, *Drummond.*—Stems four to six inches high, slender. Cauline leaves 1–2 inches long. Heads 3 lines long, solitary or geminate at the summit of the stem or of the simple filiform branches. Exterior scales of the 10–12-flowered cylindraceous involucre ferrugineo-fuscous, chartaceo-scariose, ovate, acuminate; the inner tipped with a short and yellow radiant appendage. Achenia and pappus smaller than in *P. pygmæus* and *P. Drummondii;* the setæ not more rigid, but with a shorter plume.

9. P. *ramosus* (n. sp.): subglaber; caule ramosissimo erecto; ramulis apice 2–3-cephalis foliisque lineari-filiformibus subglutinosis; involucro demum campanulato extus foliis pluribus brevibus arcte bracteatis; squamis intimis appendice oblonga conspicua radiantibus.

Swan River, *Drummond.*—Stems 6–10 inches high, slender. Heads rather smaller than in the last, 15-flowered. The bracteant leaves are appressed, and imitate an external involucre; the proper involucral scales are pale, in few series; the inner bearing a yellow radiant appendage of its own length. Pappus with a rather shorter plume than in the preceding.

ACROCLINIUM, nov. gen.

Capitulum multiflorum; floribus omnibus tubulosis hermaphroditis, marginalibus fertilibus cæteris plerisque abortu ovarii sterilibus. *Involucrum* late campanulatum pluriseriale; squamis exterioribus chartaceis breviter scarioso-appendiculatis, interioribus appendice petaloidea radiantibus. *Receptaculum* e basi lata acute conicum vel in centro subulato-productum, epaleatum, scrobiculatum, ambitu subalveolatum. *Corollæ* conformes, infundibulari-tubulosæ, 5-dentatæ. *Antheræ* basi breviter bisetæ. *Styli* rami fl. fertil. apice truncati brevissime penicillati; fl. sterilium similes sed breviores vel brevissimi. *Achenia* fertilia turbinata, pilis prælongis confertissimis niveis sericeo-villosissima, sterilia exteriora sericea, interiora sensim inania glabrata; callo basilari obliquo. *Pappus* persistens, e paleis setiformibus rigidis 10–20 basi subconcretis, fl. fertil. dense plumosis; fl. steril. tenuioribus sæpius paucioribus (6–12) minus plumosis apice nudis vel penicillatis.—Herbæ humiles, haud lanatæ; caulibus e radice annua plurimis simpliciusculis adscendentibus foliosis apice monocephalis, foliis alternis linearibus; capitulis majusculis.

§ I. Pappi paleæ apice nigricantes, fl. fertil. ad apicem usque dense plumosæ; fl. steril. apice penicillato-plumosæ, inferne nudiusculæ. Involucrum appendiculis ovalibus oblongisve eximie radians.

A. *multicaule* (n. sp.): glaberrimum; foliis brevibus (2–4 lin. longis) anguste linearibus vel subspathulatis obtusis crassiusculis; involucro basi scarioso squarroso; receptaculo e basi lata apiculato-conico. —Variat *a*, radiis involucri lacteis; *β*, radiis involucri flavescentibus et subæruginosis.

Swan River, *Drummond*.—Stems a span or more in height. Heads depressed, nearly an inch in diameter, including the spreading involucral rays. Pappus rather longer than the corolla. The uppermost of the mass of white hairs which so densely clothe the achenium attain, in the outer and truly fertile series, to more than half the length of the pappus.

2. A. *rubellum* (n. sp.): foliis lineari-lanceolatis acutis caulibusque tenellis glanduloso-puberulis; receptaculo convexo in centro subulato-producto; radiis involucri campanulati roseis.

Between Swan River and King George Sound, *Drummond*.—Stems 3–5 inches high, few or solitary. Leaves ½ to 1 inch long; the uppermost minute. Heads smaller than in the preceding. Fertile achenia clothed with rather shorter silky hairs; the pappus of more setiform and strongly plumose paleæ, much longer than the corolla. The centre of the receptacle rises into a narrow and sharp-pointed column; the sides of this prolongation, as in the preceding species, bear the infertile, its apex the truly abortive ovaries, while the truly fertile flowers surround its base.

§ II. Pappi paleæ modice plumosæ apice setiformi-attenuatæ nudiusculæ; fl. steril. conformes sed vix plumosæ.

3. A. *phyllocephalum* (n. sp.): glabrum; caulibus simpliciusculis superne usque ad capitulum sessile foliosis; foliis lanceolatis, floralibus majoribus oblongis; involucri pauciserialis squamis intimis breviter scarioso-appendiculatis haud radiantibus; receptaculo conico tuberculato.

South-west Australia, *Drummond* (received in 1850).—From the receptacle I doubt not that this species should be associated with the foregoing, notwithstanding the differences indicated.

CEPHALIPTERUM, nov. gen.

Capitulum multiflorum heterogamum; floribus omnibus tubulosis, mar-

ginalibus hermaphroditis fertilibus, centralibus abortu masculis. *Involucrum* turbinatum multiseriale; squamis omnibus tenuiter scariosis, exterioribus appendice brevi late ovata seu orbiculata concolore (subhyalina fusca) abrupte patente squarrosis, interioribus appendice elliptica petaloidea (lactea vel flavescente) radiantibus. *Receptaculum* nudum planum. *Corollæ* conformes, infundibulari-tubulosæ, 5-dentatæ. *Antheræ* basi breviter bisetæ. *Stylus* fl. fertil. bifidus, ramis apice truncatis brevissime penicillatis; fl. steril. indivisus v. bilobus, apice penicillatus. *Ovaria* lana longissima crispata intricata tecta, ægre extricanda, centralia omnino abortiva pedicelliformia. *Achenia* marginalia obovata, longissime lanata. *Pappus* fl. fertil. duplex, nempe exterior constans palea unica parva auriculæformi ovata inferne setis piliformibus numerosis corolla dimidio breviore prædita, interiore paleis setiformibus circ. 4 corollam æquantibus mox deciduis basi filiformi nudis superne sensim incrassatis barbellatis apice dense barbato-plumosis; fl. steril. e setis 4 filiformibus longe nudis vel denticulatis apice barbato-plumosis, et palea exteriore minima, in centralibus ad coronulam cupulæformem nudam reducta.—Herba gracilis subpedalis, glabrata, e radice multicaulis, erecta; foliis alternis lineari-lanceolatis, radicalibus subspathulatis; capitulis plurimis ad apicem caulis dense congestis glomerulum subglobosum nudum formantibus! Pappus apice nigrescens.

C. *Drummondii.*—Variat *α*, appendicibus radiantibus involucri lacteis; et *β*, flavidis in sicco subæruginosis.

Swan River, *Drummond.*—This remarkably distinct genus is allied, no doubt, to *Helipterum*, through *Acroclinium*, and to *Schœnia;* but is abundantly distinguished from all three, as well by its curious pappus as its glomerate capitula. The achenia and abortive ovaria are entangled in an almost inextricable mass by the extremely long and crisped wool, with which they are densely clothed. The short and stout bristly hairs which form the plume or tuft at the apex of the longer pappus are recurved or crisped when dry. The heads are 3 lines in diameter, exclusive of the radiant petaloid appendages, which are of about the same length; and the glomerule they form is an inch in diameter.

CONANTHODIUM, nov. gen.

Capitulum multiflorum homogamum. *Involucrum* cylindraceo-turbinatum, pluriseriale; squamis coriaceis gradatim imbricatis, exterioribus oblongis vix scarioso-marginatis appressis, intimis linearibus paucis, lamina parvula angusta petaloidea radiantibus discum paulo superantibus. *Receptaculum* convexum areolatum epaleaceum. *Flores* omnes hermaphroditi; corollis tubulosis 5-dentatis. *Antheræ* basi caudatæ. *Styli* rami apice minute capitellati. *Achenia* (immatura) oblonga, erostria, sessilia, glabra. *Pappus* uniserialis setosus; setis capillaribus rigidis denticulato-scabridis basi inter se inæqualiter concretis. —Frutex ramosissimus, lanugine araneosa caduca; foliis alternis lineari-oblongis subpetiolatis scabrido-hirtellis, ramis monocephalis. (Involucrum viridulum; lamina squamarum intimarum lactea. Corolla lutea.)

C. *Drummondii.*

South-west Australia, *Drummond*, 1850.—A shrub apparently of considerable stature; the branchlets leafy to the top, terminated by solitary heads, which are nearly an inch in length. Leaves seldom an inch long, two lines wide, araneose beneath, the upper surface apparently somewhat viscous; the midrib impressed above and strongly prominent beneath; the lateral veins obscure, the surface of the leaf, in the dried specimens, somewhat bullate. The capitula are remarkable for their coriaceoussc ales, greenish, with whitish margins, only the innermost, with their narrow radiant tips, being at all scarious. The pappus consists of much more rigid setæ than those of *Helichrysum*. The name alludes to the (inversely) conical shape of the capitulum, called by Ehrhart an *anthodium*.

ASTERIDEA, *Lindl. Veg. Swan Riv.* p. 24.

Char. Gen. auct.—*Capitulum* multiflorum heterogamum; fl. radii uniserialibus ligulatis, fœmineis, raro tubulosis, limbo ampliato-difformi, antheris ut videtur cassis donatis; disci hermaphroditis. *Involucrum* hemisphæricum, post anthesin patentissimum; squamis numerosissimis pauciserialibus fere æquilongis, exterioribus subulato-setaceis viscoso-glandulosis, intimis angustissime linearibus margine scariosis apicem versus villoso-fimbriatis. *Receptaculum* epaleaceum, planum v. convexum, tuberculatum. *Corollæ* disci tubo gracili elongato superne leviter ampliato, limbo 5-dentato vel 5-fido. *Antheræ* basi caudatæ. *Styli* rami apice conoideo-capitellati. *Achenia* oblonga, erostria, glabra. *Pappus* 3–10-setosus; setis capillaceis corolla æquilongis vel brevioribus basi nudis vel nudiusculis superne aut barbellulatis

aut plumosis.—Herbæ forte annuæ, pl. m. viscoso-pubescentes vel pilis mollibus ramentaceis pulverulentæ, primum floccoso-lanatæ; caulibus erectis, ramis ramulisve monocephalis; foliis alternis linearibus semiamplexicaulibus, imis subspathulatis. Ligulæ et corollæ disci in sicco concolores, ochroleucæ.

Asteridea pulverulenta, Lindl., certainly belongs to the *Gnaphalieæ-Leyssereæ*, and Steetz has perhaps with good reason taken it for a species of *Athrixia*, otherwise a South African genus. But on the other hand, it differs from the subjoined new species of the same region only in the setæ of the pappus being barely *barbellulate* above (scarcely more so than in genuine *Athrixiæ*), while in these they are truly plumose. On the whole I prefer to associate the Australian species under Lindley's name, to the alternative of reducing them all to sections of *Athrixia*. I am obliged to admit a discoid species also, the deformed marginal corollas of which, however, show a manifest tendency to become radiate. It seems too near *Chrysodiscus*, of Steetz, which I have not seen. But the achenia of the latter are said to have a lateral areola, and the corollas to be uniform and barely five-toothed, the marginal ones entirely destitute of anthers.

§ 1. ASTERIDEA, *Lindl.* Pappi setæ 10, superne crassiores barbellulatæ tantum. Corollæ disci 5-dentatæ, dentibus breviusculis.

1. A. *pulverulenta*, Lindl. l. c. *Athrixia australis*, Steetz in Pl. Preiss. vol. i. p. 482.

§ 2. PTILOTHRIXIA. Pappi setæ 4–10, superne vere plumosæ albæ. Corollæ disci limbo profunde 6-fido, lobis linearibus vel lanceolatis.

* Capitulum radiatum, ligulis elongatis. Squamæ involucri extimæ in setam longam attenuatæ. Pappus corollâ paulo brevior.

2. A. *multiceps* (n. sp.): nana, lana floccosa mox decidua tecta; caulibus plurimis e radice forte annua parce ramosis; foliis lanceolatis, radicalibus oblongo-spathulatis; involucro lanato-villosissimo, ligulis plurimis; pappi setis 8–10.

South-west Australia, *Drummond.*—Stems rather stout, three inches high. Head two-thirds or three-fourths of an inch in diameter, not including the numerous linear-lanceolate ligules; the latter are nearly half an inch long, three-toothed at the apex.

3. A. *gracilis* (n. sp.): caule gracili e radice annua simpliciusculo foliisque linearibus lana tenui araneosa caduca primum indutis; invo-

lucri squamis exterioribus glanduloso-hirtis, intimis apice setaceo-villosis; ligulis 5–8; pappi setis radii 3–4, disci 5.

Swan River, *Drummond.*—Stems 6 inches high. Heads small; the involucre only a quarter of an inch in diameter.

* * Capitulum discoideum; floribus omnibus hermaphroditis, sed paucis in ambitu sæpius corolla apice ampliata difformi 3–5-lobata antheris cassis donata. Pappus corollæ disci æquilongus.

4. A. *stricta* (n. sp.): tomento appresso tardius floccoso-soluto cano-lanata; caulibus e radice fusiformi erectis simpliciusculis; foliis caulinis anguste linearibus; involucri squamis pauciserialibus glanduloso-puberulis, exterioribus apice villoso-barbatis, intimis ultra medium villoso-fimbriatis; pappo 4–5-setoso.

Swan River, *Drummond.*—Stems 1–2 feet high. Head nearly half an inch in diameter. Lobes of the corolla lanceolate, or in the ampliate marginal flowers ovate.

DIOTOSPERMA, nov. gen. Melampodinearum.

Capitulum pauciflorum, heterogamum; floribus radii 3–4, fœmineis, vix ligulatis; disci totidem, tubulosis, abortu masculis. *Involucrum* simplex, uniseriale, e squamis 5–6 consimilibus ovato-oblongis, concaviusculis, membranaceo-herbaceis, margine anguste scarioso ciliato-fimbriolatis, per anthesin flores æquantibus. *Receptaculum* parvum, planum, epaleaceum. *Corolla* fl. radii tubo brevissimo oblique truncato in ligulam minimam apice 2–3-denticulatam vix explanato, stylo suo brevior, persistens; disci cyathiformis parce glanduligera, limbo 3–4-lobo. *Antheræ* ovales, connatæ, ecaudatæ. *Stylus* fl. fœm. bifidus, lobis lineari-oblongis divaricatis glabris; fl. masc. superne incrassatus, apice sæpius inæqualiter bilobus, lobis subulatis hispidis. *Ovarium* fl. masc. lineare, exovulatum; fl. fœm. achenio simile sed multoties minus. *Achenia* involucrum 2–3-plo superantia, ab eo prorsus discreta, obovato-subtrigona, apice bicornia, nempe explanata, obcompressa alata; ala suberosa, crassa, arcte involuta (ut achenium subtrigonum ventre profunde sulcatum apparet), ad apicem late truncatum in auriculas hirsutas prælongas arrecto-patentes producta. *Pappus* nullus. *Cotyledones* obcompresso-planæ, leviter incurvæ.—Herba pusilla e radice annua, multicaulis, hirsutula: caulibus gracilibus, diffusis, ramosis; foliis integerrimis, infimis obovatis oppositis,

superioribus subalternis spathulatis vel sublinearibus; capitulis minimis, ad apicem ramorum solitariis paucisve aggregatis.

D. *Drummondii*, A. Gray (in Hook. Ic. Pl. tab. 855).

South-western Australia, *Drummond.*—Stems 3–5 inches long, weak. Capitulum less than a line long before fruiting; the scales of the involucre not at all complicate nor involving the female flowers. Ligule, if the slightly explanate upper part of the obliquely truncate corolla may be so called, shorter than the style, very much shorter than the auricles of the ovary. Ovaries of the disc wholly sterile, bearing an obscure crown at the apex. The singular achenium becomes fully a line and a half in length, very much exceeding the involucre; it is more or less hirsute, with hairs which are capitate at the apex; the stronger hairs of the auricles are glochidiate. The margins of the wing are entire, and involute from the first, but they become thicker as the achenium matures; the two incurved ascending linear-oblong auricles into which they are extended above, are half as long as the achenium itself.—This genus is evidently related to *Silphiosperma*, Steetz, also from West Australia, and especially to his *S. perpusillum*, which is described as differing from *S. glandulosum* in its few-flowered capitula and uniserial involucre. But it is said to have the involucral scales plicate and involving the female flowers; and the achenia plano-compressed, not excised at the apex or with anything like the singular auricles of the present plant. Both genera should doubtless be referred to the *Melampodineæ-Partheniecæ*.

Notice, by the REV. CHURCHILL BABINGTON, M.A., *of the* LICHENS *collected by* Dr. Sutherland, *during the Arctic Voyage of* Capt. Penny, *in the "Lady Franklin."*

No. 91. *Parmelia elegans, a, miniata*, Schær.! n. 338; on limestone, fine and fertile; accompanied by other lichens in an imperfect state, among which are, as it seems, *P. pulverulenta* or *aquila*, Ach. (barren), and *P.* (Lecanora) *vitellina*, Ach.: also the scattered apothecia of another *Lecanora:* likewise another lichen (without any crust) which I have also gathered in the Tyrol, which Dr. Montagne (in list) considers a *Verrucaria*, "belle et bonne espèce nouvelle," but which recedes so much in character, that it seems to me rather to belong to Fries's genus *Limboria*, judging from the description. Collected near Assistance Bay.

No. $\frac{80}{1}$ comprises the following lichens.—*Parmelia elegans*, *a*, Schær.! *Lecidea geographica*, var. *contigua*, Fries. *L. atroalba*, Ach., Fries, (hypothallo prædominante crasso, dendritico). *L. lapicida?* Fries, ex descr. *L. confluens*, Fries et Auct. pr. p. Also another *Lecidea*, which appears to have changed colour, seemingly allied to *L. superficialis*, Schær. Likewise other lichens in an imperfect state, one of which is perhaps *Urceolaria scruposa*, Ach. *Lecidea contigua*, var. *calcarea*, Fries. *Parmelia aurantiaca*, γ *calva*, Fries. Assistance Bay.

No. $\frac{72}{2}$. *Parmelia aquila?* Ach. (very imperfect and barren), mixed with *P. elegans* (as above), fertile. Prince Alfred's Bay.

No. 107. On a piece of bone, used as an implement by the Eskimaux, there are some fragments of lichens. *P. aquila?* barren; and apothecia of *P. vitellina*. Cornwallis Island.

No. 89. *Protococcus nivalis*. Assistance Bay.

No. $\frac{74}{8}$, $\genfrac{}{}{0pt}{}{74}{a}$. *Parmelia pulverulenta*, Ach., var. Fries (*P. pityrea*, Ach.), on moss, barren. Also *P. elegans*, Ach., fertile. Also *Dufourea ramulosa*, Hook., I suppose, but have seen no specimens.

No. $\frac{72}{2}$. Very imperfect; possibly spoiled *Lecidea geographica*, Ach., in part.

No. 28. *Umbilicaria hyperborea*, Hoffm. *U. proboscidea*, *a*, Fries, two forms: one smooth below, and one hairy below. *Parmelia stygia*, var. *lanata*, Fries (*Cornicularia lanata*, Auctt.).

No. 48 comprises the following lichens, collected near Cape York, Davis Straits.—*Evernia ochroleuca*, Fries. *Cetraria nivalis*, Fries. *Cladonia rangiferina*, Hoffm. *C. pyxidata*, Fries. *Dufourea ramulosa*, Hook.? young state. These grow on the ground, matted among each other; all barren. There is likewise a mere morsel of *Evernia divergens*, Fries. Also *Umbilicaria vellea*, Fries, Summ. Veg. Scand. (*U. vellea*, *a*, ejusd. Lich. Eur.) var. *lecidina*, Bab.: apothecia at first resembling a *Lecidea*, then tuberculated, never gyrated or much papillated in the present fine specimen; margin rather thin, under side pale, blackish about the umbilicus, with branched pale fibres, which become darker in age. Also *Umbilicaria hyperborea*, Hoffm.: two states, fertile.

No. 92. *Lecidea vesicularis*, var. *globosa*, Fries, on earth, fertile. *Parmelia triptophylla*, var. *Schraderi*, Fries; fertile. Both from Assistance Bay.

Interesting fragments of other lichens accompany the specimens, which resemble *Parmelia fulgens* and *P. coarctata ;* but the remains are too imperfect to determine with any certainty.

BOTANICAL INFORMATION.

Intelligence of MR. SPRUCE, *in a letter to* G. Bentham, Esq.

Barra do Rio Negro, Nov. 7, 1851.

Two nights ago reached me your letter of July 22nd, and also the Indians I had been long expecting to take me up the Rio Negro. I am now hard at work packing up my collections for you, and arranging "negocios" for the voyage. It is no use taking money up the Rio Negro, and, except a little copper, I am laying out my whole fortune in prints and other fabrics of cotton, axes, cutlasses, fish-hooks, beads, looking-glasses, and a host of sundries. The trafficking of these involves a serious loss of time, but there is no alternative.

We had sad news lately from Pará: Singlehurst's vessel, the Princess Victoria, was lost in entering the mouth of the river, and nothing of her cargo was recovered. Miller went out in a boat from Pará to see the wreck, caught a constipaçaõ, which excitement aggravated into brain-fever and speedily carried him off. I have not a word from the young men in his employ, and I know not whether the business will be carried on or forthwith wound up. You will of course learn from Singlehurst if all is to go on as usual. I had reason to expect there would be on board for me a case containing drying and packing paper, jars for succulent fruits, and several other things, sent by Sir W. Hooker. The loss to me is great, especially of the fruit-jars.

Poor Miller was a very fine young man, and his loss to me is irreparable, as he was so ready to do anything I needed, even to putting himself to inconvenience. He was a schoolfellow of Gardner, and was stationed at Aracati when Gardner visited that place, where he rendered him great assistance.

I am much obliged for the catalogue. Any remarks with which you favour me on my plants will always be thankfully received. Will you be kind enough to indicate the Natural Orders of any new genera you may propose, in future? I see you have made two species out of the *Sapotacea* n. 926: one of them, *Lucuma lateriflora*, is of the *gapó*, the other, *L. parviflora*, of the *terra firme*. I noticed slight differences when I gathered them. The Indians say that not a single plant of the Gapó is found in the Mato Virgem da terra firme (*Urwald*), and I am now certain that they are almost literally correct.

Since my last *envoi* I have travelled about more than at any time previously, and I believe that in this collection you will find absolutely nothing common. In May, the middle of the wet season, not a tree was to be seen in flower in the forest, or *capoeiras*, but I found that at that season precisely the twiners of the Gapó began to flower; and the south shore of the river and the inundated angle between the Solimoês and the Rio Negro was soon quite gay with *Serjaniæ*, *Asclepiadeæ*, etc. The trees of the Gapó do not flower until the water begins to leave them. In this month too I went down to the mouth of the Rio Negro (about eight miles below the Barra) and remained there four days. I found it such an excellent station that I resolved to revisit it later in the season. I met there also an Indian carpenter whom I engaged to construct the cabin (*tolda*) of my canoe, and in the month of July I took her down there and remained until the cabin was completed. There is an extraordinary difference in the vegetation of the opposite shores of the Amazon, at the junction of the Rio Negro and Solimoês. You will find in the collection some plants marked "Mouth of R. Negro," and others "Mouth of Solimoês": the former plants are laved by *black* water, and the latter by *white*. Any one at first sight would take the Amazon to be the continuation of the Rio Negro, from the breadth and direction of the latter; but this cannot at all compare with the Solimoês for depth of stream and rapidity of current. It may be long before any one exposes himself again to gather the few plants I got at the mouth of the Solimoês—such a place for snakes and ants in the trees I never met with. In the wet season every terricolous animal must betake itself to the trees, where thousands of miles of forest are inundated. Among plants from the forests at the mouth of the Rio Negro, none interested me more than the *Cajú-assú*, a tree I had heard spoken of throughout the Amazon, but could never fall in with previously. It is apparently a true *Anacardium*, but grows ninety feet high!

In the month of June I had an excursion up the Solimoês, my destination being Manaquiry—a group of sitios on a small river and lake of the same name, lying to the south of the great river. It is accounted but three days' journey from the Barra, but it cost me a week, with four men, so strong was the current in the very height of the wet season, and so little wind was there. Notwithstanding the slowness of the voyage, I found collecting very difficult. Although we crept along shore we were rarely near enough to pluck any flowers. I sometimes stood in the prow with a long hooked pole, and when we came near enough to reach any twiner I 'made a point' at it: in this way were gathered a remarkably fine *Apocynea*, a *Mucuna*, and several others; but, I need not add, in very small quantity. It was only two or three times that we were "parado" long enough during daylight to enable me to penetrate into the Gapó with the montaria; yet in this way I got the few curious aquatics in my collection, a second species of your new genus *Enkylista*, and some other things. By the bye, our little *Phyllanthus fluitans* was there in abundance: are you sure that the embryo of this is *dicotyledonous?*—there is a remarkable *analogy*, to say the least, with *Hydrocharis*.

I had great difficulty also in drying my paper, for, not to speak of the rain, during the whole week of the voyage *we never saw land*, and the drying had to be done on board. But when there was wind it was difficult to secure the paper against being carried away, and when there was none I could scarcely spread it out so as not to be in the way of the rowers.

At Manaquiry I paid a visit to a Senhor Zannij (son of the Colonel Zannij who was deputed by the Brazilian Government to accompany Spix and Martius in the province of Pará) and spent a night with him. He told me that these naturalists passed some days at Manaquiry; it is therefore possible I may have got some of the same species as Martius gathered there. The whole region between the Madeira and the Purús is a noted country of Cacáos: in the woods behind Zannij's house I saw two species new to me, and got one of them in flower.

My stay at Manaquiry, and the voyage thither and back (the latter only eighteen hours!), occupied above three weeks, but the weather was dreadful (being the fag-end of the wet season), and so interfered much both with collecting and preserving. Besides I was quite too early for the forest-vegetation, and I saw multitudes of trees whose foliage was new to me, but which had not begun to show their flowers.

My time has been a good deal interrupted of late, partly by illness and partly by superintending the preparation of my canoe. If I had foreseen all the trouble and expense attending the latter, I should perhaps not have purchased it; but I hope to be repaid in the greater facilities for working on the voyage, which I have thereby secured. These fellows will not work unless they are looked after, and none but a slave thinks of working three days together: if a carpenter can earn money enough in two days to keep him a week, why should he work more than the two days?

I should have gone down to Pará to get a man to supply King's place but for the sacrifice of time. *There* are several free blacks and mulattos, accustomed to constant work; but *here* none such are to be met with. The house-work has consequently fallen on me alone, yet I think my collection is superior to that of the corresponding months of last year, notwithstanding all drawbacks. The Indians do well enough in the field, when one knows how to manage them. Humboldt, from some remarks in his 'Aspects of Nature,' seemed not to have attained this art. It does not do to ask them to do anything *as a task*, however much money, etc., you may offer for the performance of it; my usual invitation is "Yassó yaöatá," ("Allons nous promener"); we get into our montaria, enter one of the igarapés, and when we reach the heart of the forest they are all alacrity to climb or cut down the trees; the gathering of the flowers being all the while represented as a mere matter of amusement. As I had no letters from Pará to the authorities here (no British consul having been there for now more than a year and a half) I have had to send as far as Saõ Gabriel da Cachoeira for men—a month's distance, at least, above the Barra. I expected them several weeks ago, but I had news that all were ill, and I had almost given up all expectation of them, when they arrived on the night of the 5th instant. There are five of them, all stout fellows, and I have "arranged" other two here (one a Peruvian Indian from Moyobamba); so that, as my canoe goes well under sail, I hope to get along merrily. I propose to make Saõ Gabriel my first resting-place. It is exactly on the equator, in the midst of cataracts and mountains, and ought to produce something good. The *Podostema* that grow on the falls are a chief article of support to the natives for one-half of the year!

Copy of a Letter from MR. SPRUCE, *addressed to* Mr. John Smith, Royal Gardens, Kew, *dated,*

Falls of S. Gabriel, Rio Negro, Dec. 28, 1851.

Dear Sir,—"Thus far have I advanced into the bowels of the land without impediment," and before adventuring the falls (where I may possibly get a ducking) I seize an opportunity of sending you the seeds of a beautiful Lythraceous tree, which I collected on my way up. It grows on a sandy shore about twenty miles above the Barra, and I had gathered flowers of it on the 1st of October. Its habit is almost that of *Lagerstrœmia Indica,* but the flowers are still more showy, and as I saw no tree above twenty-five feet high, and all were clad with flowers almost to the ground, I have no doubt you will be able to flower it at four or five feet high. It seems to be a *Physocalymma,* a genus (if I may trust to Paxton) not in cultivation. My specimens give no idea of the beauty of the plant, as I was taken ill after gathering them, and they were nearly spoiled before I could get them into paper.

I left the Barra on November 14, and reached here on December 18, a good voyage, considering that I worked all the way, and, consequently, made frequent stoppages. I have dried some 3000 specimens on the voyage—a much greater number than I ever dried on any previous voyage; and I am now occupied in arranging them for packing into a case which I shall leave here to be forwarded to Pará. It was the owner of this sitio (Senhor Manoel Jacinto de Souza, a lieutenant of police) who sent me five out of the six men that composed my crew. They were under no obligation to ascend higher than Uanaúaca, but they have agreed to accompany me to Saõ Gabriel, if I will only let them have a fortnight to work in their roças. It was no slight trouble to have to send a thousand miles for men, to wait three months for them, and then to have to pay them for the voyage down, and for the time they were waiting on me in the Barra (for they came on me quite unexpectedly) as well as for the voyage up; yet even on these terms I was glad to get them. So immense is the difficulty of procuring men here to do anything, that I think of removing altogether to Venezuela.

If I find plenty of fine Orchises here, I propose to load one or two canoes with them, take them myself to Pará (a voyage down and up of five or six months!), and there pack them for England. I could also in Pará procure an assistant, which here is impossible. My boat is larger than most that ascend to Saõ Gabriel, yet in the cabin my baggage and paper took up so much room that there was only space for one person to work comfortably, and had I had with me a companion I could not have prepared perhaps half the number of specimens; but on land, where there is plenty of room to work, an active fearless fellow would be a great acquisition.

I should like to ascend the Rio Negro again, because I was obliged to leave so many fine things on its banks. After passing Barcellos almost everything was new, and so many things were in flower that I was obliged to confine myself to those which presented the greatest novelty of structure. Nothing like this has ever happened to me before: I was obliged, for instance, to shut my eyes to Myrtles, Laurels, Ingas, and several others. Between the Barra and Uanauáca I counted no fewer than fourteen species of *Lecythis* in flower, and all but one new to me! Yet of these I only got a stock of four or five, for (to say nothing of the difficulty of preserving so many things) I found my Indians very difficult to set going again when stopped in the middle of their work. And when you consider the time that is lost in collecting trees—for your tree is rarely on the very river's brink, but you have to cut your way to its base with cutlasses, and it has then to be climbed or cut down—you will understand why I generally contrived to make my collections when we stopped to cook our meals.

I enclose you two flowers of a Leguminous tree which was in flower all the way up the river, and formed a great ornament to its banks. It is a *Heterostemon* (a most remarkable genus), but whether a described species I cannot say. The petals are a fine blue slightly tinged with purple, and the column of stamens is red; there are no pods ripe yet, but I will try and send you some. As it often flowers at ten feet high it is very suitable for cultivation. But the glory of the Rio Negro is a Bignoniaceous tree (apparently an undescribed genus) with whorled leaves and a profusion of pink flowers the size of those of the foxglove: it grows ninety feet high!

In *Cryptogamia* alone am I disappointed in the Rio Negro, though I always had my eyes open for them. The following is my Cryptogamic summary thus far:—Ferns 0, Mosses 0, Hepaticæ 1, Lichens 3 or 4 epiphyllous species!

Would you have expected this of the Rio Negro? I certainly hoped something better of it. In place of these tribes there are, however, plenty of *Podostemons* on the granite rocks which peep out of the river (and, by the bye, make the navigation very dangerous), but all, *all* dead and burnt up. It is here as I remarked at Santarem—the *Podostemons* flower just as the water leaves them, that is, early in the dry season, and my ascent of the Rio Negro was made towards the close of the dry season; but if I live these little fellows shall not escape me. As their fruit is exposed to a burning sun six months or more in the year, I do not see why they should not travel safely to England in a letter, and I accordingly enclose capsules of one of the largest species. They ought to vegetate on stones (especially granite) barely emersed from the water of a tank; though here they never grow in *still water;* always in rapids or cataracts where the water rushes over them.

I had sad news two days ago from my friend Wallace: he is at Saõ Joaquim, at the mouth of the Uaupés, a little above S. Gabriel, and he writes me by another hand that he is almost at the point of death, from a malignant fever, which has reduced him to such a state of weakness that he cannot rise from his hammock nor even feed himself. The person who brought me the letter told me that he had taken no nourishment for some days, except the juice of oranges and cashews. Since I came to Pará the fevers of the Rio Negro have proved fatal to two of the persons mentioned in Edwards's Voyage—Bradley and Berchenbrinck, very fine young men both. Wallace's younger brother, who came out from Liverpool along with me, died last May in Pará; he had gone there, poor fellow, to embark for England—took the yellow fever, and died in a few days.

The Rio Negro might be called the Dead River: I never saw such a deserted region; in S. Isabel and Castanheiro there was not a soul as I came up, and three towns marked on the most modern map I possess have altogether disappeared from the face of the earth. We had beautiful weather in coming up, and to this may be attributed that I and all my people arrived here in good health. The region of malaria ends at Castanheiro, but the poison is said to remain in the system sometimes thirty days before it shows itself, so that I am told to consider myself not yet out of danger. I do not however let this in the least annoy me: I am not one of the forwardest to face perils, but once embarked I think no more of consequences. Mr. Wallace came up from the Barra more than a month before me, escaped the Sezoêns on his way, but the day he set foot in Saõ Joaquim he was attacked.

What a beautiful little Palm is *Mauritia armata* of Humboldt! It is remarkable for growing in *tufts;* and as I sit writing I can distinguish a cluster of perhaps fifty stems on the opposite shore. It is abundant on all the upper Rio Negro; it would fruit beautifully with you.

RICHARD SPRUCE.

On the Chemical Composition of Crystals of Borneo Camphor.

The two following notes should have been given with the account of the Borneo Camphor-tree, which appeared at page 200 *et seq.* of our present volume.—ED.

19, Clapham Rise, April 2, 1852.

My dear Sir,—I have received the large crystal and the large fragment from Professor Miller, and will in a few days leave them with Dr. Percy for you. Professor Miller has referred to Frankenheim's paper, according to which the crystalline form of Borneo Camphor is a rhombohedron, which your crystal undoubtedly is not. He has therefore either mistaken the form or taken it upon trust from some one else, or has described some other resin under the name of Borneo Camphor. The chemical composition given by him is

10 Carbon = 754·15; 9 Hydrogen = 112·3; 1 Oxygen = 100, according to the equivalents given in Rammelsberg's fourth Supplement. But whether this is the composition of your resin is uncertain.

To Sir W. J. Hooker. H. J. BROOKE.

Museum of Practical Geology, April 14, 1852.

Dear Sir,—I have the pleasure to send you the analysis of the Crystalline Resin sent by you to Dr. Percy. Its composition is as follows:—

Carbon, 64·72; Hydrogen, 11·87; Oxygen, 23·41.

I have much to regret that the quantity we have remaining, though sufficient to make out a few facts (of little value by themselves), is not enough to render a detailed examination possible; and the more so, that it appears to be possessed of many properties altogether dissimilar to the rest of its class.

To Sir W. J. Hooker. T. T. PHILIPPS.

NOTICES OF BOOKS.

EPIMELIÆ BOTANICÆ: *auctore* CAROLO BOR. PRESL, M. et Ph. D.

Of this quarto publication 192 pages with fifteen plates are devoted to the development of Dr. Presl's peculiar views on the systematic grouping of Ferns, and to the establishment of a vast number of supposed new genera and species. The remaining seventy pages form a kind of sequel to the 'Botanische Bemerkungen' of the same author, already noticed by us (London Journal of Botany, vol. vii. p. 103); and we regret to say, the critical remarks we thought it necessary to make on that work are equally applicable to the present one. It exhibits the same reckless establishment of new genera founded upon incorrect analysis, mistaken affinities, and neglect of the labours of others, the same apparent desire to attach the author's name to as many species as possible, and the same apparent antedating of the work by at least two years; for although it bears on the title-page the date of 1849, it does not seem to have been in the hands of booksellers till the commencement of 1852.

Under these circumstances any detailed criticism might be superfluous, but, as many of the so-called new genera are taken from collections which have been very generally distributed, it may not be amiss to give some clue to such of them as have come under our observation.

Grymania (p. 193) is *Couepia* as limited in Hook. Journ. Bot. 1840. vol. ii. p. 212.

Adenopodia (p. 206) is in nowise distinct from *Entada;* the doubt formerly entertained on the question, owing to the fruit having been imperfectly known, is now removed by the examination of the ripe pod, which, as stated by Presl, is precisely that of *Entada*.

Cymelonema, referred to *Memecyleæ* (p. 210), is a species of *Urophyllum* (*Rubiaceæ*), on which the stipules, being small and often nearly obliterated, were overlooked by Presl.

Hyperum trifidum (p. 211), from Brydges' last Chilian collection distributed by Cuming (not from Cuming's own collection), is identical even as a species with *Wendtia gracilis*, Meyen, *Ledocarpon Reynoldsii*, Hook. Ic., and *Martiniera potentilloides*, Guillem. in Deless. Ic. Dr. Presl appears however to have examined a flower deprived by accident or by abortion of two of its stigmata.

Carlea (p. 216), referred to *Onagrarieæ*, is a species of *Symplocos!* and as far as we can judge from the description *Leucymmæa* (p. 211), referred to *Memecyleæ*, is another *Symplocos;* but on this point we cannot speak with certainty, as we do not possess Helfer's plants.

Corynostigma (p. 218) is a true *Jussieua*, closely allied to *J. nervosa.*

Botryoropis (p. 220) is the well-known *Barringtonia acutangula.*

Strakæa (p. 221) is a *Bragantia*, closely allied to, if not absolutely identical with, *B. corymbosa*, Griff., and if distinguishable from *Bragantia*, as proposed by Griffith, it should take his name of *Asiphonia.*

Blepharochlamys (p. 245), generically distinguished from *Mystropetalum* as being diœcious, is the very plant upon which *Mystropetalum* was founded, and is essentially monœcious, as appears even in the figures and descriptions quoted by Presl, which he cannot have seen.

Cardiostegia (p. 249) is a mere variety of *Brotera bracteosa*, Guillem. et Pers., or at any rate a species very closely allied to it; and Webb has shown, in the 'Spicilegia Gorgonea' (Niger Flora, p. 111), that *Brotera* cannot be distinguished generically from *Melhania.*

The changes of names among *Piperaceæ* will probably, where they are worth adopting, have been anticipated by Miquel's valuable labours on that difficult tribe. The *Antidesmata* described p. 232–235 will be found to be illustrated in a far superior manner in Tulasne's admirable monograph in the 'Annales des Sciences Naturelles,' third series, vol. xv. p. 180, which ought in point of fact to have precedence over the 'Epimeliæ.'

GRAY, DR. ASA: PLANTÆ WRIGHTIANÆ TEXANO-NEO-MEXICANÆ; *an account of a collection of Plants made by* CHARLES WRIGHT, A.M., *on an Expedition from Texas to New Mexico, in the summer and autumn of* 1849, *with critical notices and characters of other new or interesting plants from adjacent regions, etc.* Part I., large 4to. Washington City.

This is one of those important memoirs, which, like our friend Dr. Harvey's 'Nereis Boreali-Americana,' owes its appearance to the "Smithsonian Institution," and comes under the general head of "Smithsonian Contributions to Knowledge." It gives a list of all the species detected by Dr. Wright, and other Texan and New-Mexican travellers, with synonyms and remarks, and essential characters, and descriptions of the many new genera and species, together with beautiful figures of twelve of the most remarkable of them from the pencil of Mr. Sprague. Mr. Charles Wright left Galveston for San Antonio in the spring of 1849, and there joined the United States army, which he accompanied to El Paso in southern New Mexico, as an amateur man of science, for the purpose of investigating the Natural History, especially the Botany, of that previously untrodden region. The journey from San Antonio occupied three months, and nearly the whole of September was spent in exploring the interesting neighbourhood of El Paso. He returned to San Antonio in November, having added many new plants to his collection, which had occupied his notice on the outward journey, as well as a large collection of seeds and of living Cactaceous plants. Specimens of the latter were placed in Dr. Engelmann's hands for examination. The seeds were divided between the Botanic Garden of Harvard University, U.S.A., and the Royal Gardens of Kew.

The entire collection, Dr. Gray observes in his preface, will give a good idea of the vegetation, and consequently of the climate, general character, and capabilities, of the region traversed. The learned author has appended notices and characters of plants gathered by other collectors in adjacent regions, especially by Dr. Wislizenius in the valley of the Rio Grande and in Chihuahua, and by the indefatigable Dr. Gregg (since dead) in the same district and in the northern provinces of Mexico, chiefly from materials furnished by Dr. Engelmann.

The first part now published extends to 146 large quarto pages, and includes the orders (following De Candolle's arrangement) to the end of *Compositæ*. The new plants figured are *Greggia camporum* (Cruciferæ), *Wislizenia refracta*, Engelm. (Capparideæ), *Zalinopsis frutescens* (Portulacaceæ), *Amoreuxia Scheidiana*, Planch. (Cochlospermeæ), *Mortonia sempervirens* (Celastrineæ), *Fendlera rupicola* (a new genus, confirming the author's previously expressed views, that *Philadelphus* should be united with *Saxifragaceæ*), *Sontwellia Flaveriæ*, *Thymiphylla Greggii*, *Nicolletia Edwardsii*, *Laphamia halamifolia*, *L. rupestris*, and *Zinnia anomala* (the last six all *Compositæ*). The Wrightian species in the catalogue here given amount to 418. We say much when we add that the work is worthy of its excellent author.

Contributions to the Botany of WESTERN INDIA ;

by N. A. DALZELL, ESQ., M.A.

(*Continued from p.* 114.)

Nat. Ord. AROIDEÆ.

LAGENANDRA, *Dalz.*—Genus novum Cryptocoryneas et Dracunculineas conjungens.

Spatha basi tubulosa, medio fisso subclauso, a medio valde attenuata subulata, valva tubum subclaudente, cum spadicis vertice mucronato connata. *Spadix* inclusus, interrupte androgynus, medio nudus filiformis. *Stamina* plurima in spadicis apice hemisphærico conferta, sessilia, spiraliter disposita; antheræ didymæ, biloculares, *loculi lageniformes*, pollen ex lagenæ colli tenuis apice evadens. *Ovaria* plurima circa spadicis basin verticillata, *libera*, obconica, pressione mutua angulata, circa apicem molliter echinulata, unilocularia, ovula 4–8 in placenta basilari erecta. *Stigma* sessile, planum, discoideum, 5-gonum, papillosum. *Capsulæ* (maturæ) carnosulæ, in apice scapi confertæ, caput diametro pollicare efformantes; *semina* cylindrico-oblonga, sulcata, hilo carnoso, integumentum seminis solubile; *embryo* in albumine copioso corneo cylindricus.—Herba *paludosa seu aquatica* 3-*pedalis*, rhizomate *repente crasso simplici perennans.* Folia *longe petiolata, oblonga, obtusa, integerrima, margine undulata, nervo medio valido utrinque nervos secundarios tenuissimos exserente ;* vaginæ *stipulares* oppositifoliæ, *liberæ, acuminatæ, dorso carina duplici instructa, petioli teretes longissimi* (non vaginantes). Scapi *axillares, solitarii, compressi, 2–6-unciales.* Spatha *scapo paulo longior, extus carneo-olivacea, intus tubo atro-purpureo.*

L. *toxicaria*, Dalz.

Crescit raro in paludibus Concani australioris; fl. Feb., fructum maturum legi tempore pluviali.

The family of the *Aroideæ*, though generally possessed neither of fragrance nor fine colours (but having, on the contrary, a repulsive odour so similar to that of animal putrescence that the carrion-flies are deceived by it, and deposit their larvæ on the spadices), must always be extremely interesting to the botanist, from the singularity of their forms and their curious inflorescence. The plant now described,

though conspicuous for its size, seems hitherto to have escaped the eyes of botanists in its native country; it is not merely an addition to the number of the *Aroideæ*, but a new form, participating in the distinctive characters of two tribes hitherto clearly separated, having the flowers of *Cryptocoryne*, distinguished by the union of the spadix with the spathe, and the division of the latter into two chambers, but entirely differing from that genus in its free ovaries, in which it exactly resembles an *Arum* or *Arisæma*. The leaf is more like that of a *Musa* or *Strelitzia* than of any *Aroideu*, having a stout petiole two feet long, and a thick almost coriaceous blade. The opposing stipule, which encloses the corresponding leaf in its earlier stage, is five inches long, acuminated from a broad base, with two very sharp keels on its back, and a deep furrow between them. The anthers are unlike anything I have seen in this family, for instead of opening by terminal pores, each loculus is furnished with a long slender tube, and this resembles a flask or ancient bottle, from which resemblance I have drawn the generic name. The fruit is not berried, but semicapsular*.

Nat. Ord. EBENACEÆ.

HOLOCHILUS, genus novum.

Flores dioici. *Calyx* tubulosus, *integer*, *truncatus*, in squamis paucis bifariis imbricatis insidens. *Corolla* tubulosa, fere ad medium trifida, calyce triplo longior, lobis ovatis obtusis patentibus. *Stamina* in fl. fœm. 6, sterilia, basi corollæ inserta, inter se libera, antheris filamento duplo brevioribus. *Ovarium* in fl. fœm. hemisphæricum, glabrum, 6-loculare, styli 3, erecti, crassiusculi, apice obtusi, ovula in loculis solitaria pendentia.—Arbor *mediocris*, foliis *ellipticis vel oblongis basi attenuatis apice obtuse acuminatis breve* (½ *poll.*) *petiolatis coriaceis glabris* 4–5 *poll. longis* 2 *poll. latis.* Flores *albi*, *minuti*

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* Mr. Law's attention, in Bombay, had been called to the same plant, for he says, in writing to Mr. Dalzell, "I had heard there was a plant which grew in abundance on the banks of a stream flowing from a sacred spring about forty miles from hence (Darwhar), and not found anywhere else in the neighbourhood, the root (rhizome) of which is a most deadly poison, and often used by the natives for that purpose, so that it has been found necessary to forbid them to gather it. The native name is 'Vutsunab,' which in Wilson's Sanscrit Dictionary is said to be *Aconitum ferox*, roots of which, I had thought it possible, might have been brought from the Himalayas and planted by pilgrims; I accordingly sent for some plants, and what should it prove to be, but your new genus *Lagenandra*."

(3 *lin.*), *axillares, solitarii, sessiles.* Fructus *cylindrico-oblongus, basi calyce truncato aucto suffultus, siccus, durus, pollicaris.*

H. *micranthus.*

Crescit raro in jugo Syhadrensi; fl. Feb. Mart.—Genus *Macreightiæ* proximum, differt calyce integro et stamina in floribus fœmineis numerosiora.

Specimens of this tree in fruit have been several years in my herbarium, but I never had the good fortune to detect the flowers until this year (1852); the male flowers are still unknown.

Nat. Ord. ORCHIDEÆ.

MALAXIDEÆ. § PLEUROTHALLEÆ.

Dendrochilum *roseum;* caulibus junioribus foliosis, adultis floriferis aphyllis foliorum vaginis scariosis striatis vestitis, simplicibus carnosis subclavatis nodosis pedalibus, foliis lanceolatis acuminatis semiamplexicaulibus basi articulatis, floribus in axillis alternis geminis longe pedicellatis, perianthii patentis subcampanulati laciniis omnibus conformibus æqualibus carnosis nitentibus roseis, floribus diam. pollicaribus.

Folia bifaria, 4 poll. longa, prope basin 1 poll. lata.—In arboribus in jugo Syhadrensi; fl. Mart. et Apr.; fructum clavatum bipollicarem maturat Januario.

One of those singular-looking epiphytes, of which the stalked *Dendrobia* exhibit so many examples in this country, where a beautiful and showy inflorescence seems to be strangely engrafted on an apparently withered and lifeless twig. This twig during the first year of its growth is of a lively green and clothed with leaves; these afterwards fall off, leaving only their sheathing bases, which envelope the stem in a grey, membranous, dead-looking covering. It is when in this state that the plant now described is ornamented with its beautiful, highly-polished, rose-coloured flowers; at the end of the third year, when the plant has perfected its fruit, the membranous sheaths fall off, and the stem dies, new shoots springing from the base, to go through a similar course. The pedicels of this plant are rose-coloured, like the flowers; across the front of the column, and below the orifice of the stigmatic cavity, there is a small crest, terminated on each side by a deeply-coloured horn, two- or three-toothed at the apex—these are doubtless the abortive stamina. Although the structure of the flower is entirely that of the genus to which I have referred it, still the habit and character of the inflorescence would appear to differ from those of *Dendrochilum*, and in these latter respects, as I have already said, are entirely similar to many *Dendrobia*, living to the same age, and flowering at the same time.

DENDROBIEÆ.

2. Dendrobium *Dalzellii*, Hook. (D. fimbriatum, *Dalz. non Hook.*); pseudo-bulbis cæspitosis orbiculatis valde depressis reticulatis epidermide albida, foliis paucis (4–5) linearibus obtusiusculis mucronatis basin versus complicatis, scapo centrali solitario tereti apice florifero folio intimo breviore, bracteis alternis bifariis subulatis ovario sessili triplo longioribus, floribus 10–20 secundis stramineis minutis, sepalis petalisque subæqualibus falcatis acutis patentibus *margine glandulis capitatis fimbriatis, labello petalis duplo breviore* oblongo basi carnoso etuberculato medio sulcato apice margine membranacea lacerata reflexa alba terminato.

Folia suprema (1–2) 3–6 poll. longa, 5 lin. lata, inferiora valde abbreviata. *Flores* 2½ lin. longi.—Crescit in arboribus ad Ram Ghât; fl. Julio.

On my first gathering this Orchid I thought it was merely a robust variety of *Dendrobium microchilos* (mihi), described in vol. iii. of this Journal, but a nearer examination proved it to be a distinct species. The margins of the petals and sepals are beautifully fringed with capitate glands in a double row, while in *D. microchilos* the margin is naked; but the greatest distinction is in the lip, which in *D. microchilos* is fleshy throughout, much narrower towards the apex, and furnished with two tubercles at the base. The habit of both plants is well illustrated by Wright's 'Icones,' No. 1642, which represents one of them, though I am really unable to say which.

2. D. *nodosum;* caulibus plurimis simplicibus pendulis nodosis pseudobulbos oblongos compressos monophyllos gerentibus, foliis lineari-oblongis obtusiusculis sessilibus, floribus vel axillaribus vel ad folii tergum solitariis breve pedicellatis, sepalis petalisque subæqualibus linearibus acutis, labelli trilobi lobo intermedio apice lateraliter valde dilatato plicato emarginato, disco lamellis 2 carnosis cristatis a basi usque ad medium notato.

Crescit in arboribus ad Ram Ghât; fl. Augusto.—Species habitu singulari, *D. Macraei*, Lindl., simillima.

Caules sesquipedales, glabri, rigidi, duri, intervallis subæqualibus, pseudobulbis sesquipollicaribus glabris nitentibus vestiti; inter pseudobulbos internodia 3–5, sursum longiora, et apice dilatata, adulta nuda, juniora vaginis tubulosis truncatis scariosis arcte vestita. *Folia* coriacea, plana, 3–5 poll. longa, 8–12 lin. lata. *Flores* albi, expansi 9 lin. lati, labello basi maculis rubris picto. *Pedicellus* 3 lin. longus, cum ovario articulatus, bracteis 5–6 scariosis acutis æquilongis tectus. *Capsula* ovalis, obtuse trigona, 9–10 lin. longa.

This curious species is certainly very like *D. Macraei*, and like no other. A large mass of it was found on a branch of *Syzygium Jambolanum* on the 25th of July last, and the flowers made their appearance on the 15th of August. There is but one flower on each branch, on the apex of the uppermost or youngest bulb, and, what is singular, not confined to the axil of the leaf, but sometimes *at its base behind;* and often there is a flower on one side of the leaf, and the oval pendulous fruit on the other. At the apex of each branch a new bulb and leaf are forming simultaneously. The point of the lip is dilated into a pair of wing-like lobes, which are erect during flowering, *i.e.* at right angles to the disc.

Nat. Ord. UMBELLIFERÆ.

PEUCEDANEÆ.

Pastinaca *glauca;* glabra, glauca, caule rigido parum ramoso, foliis radicalibus *subcoriaceis* longe petiolatis pinnatisectis, foliolis 3–5 raro integris sæpissime profunde bi-tri-lobis, lobis obovatis mucronatis *integerrimis*, involucri involucellique foliolis lanceolatis paucis *persistentibus*, calycis margine 5-dentato, fructu late ovali vittis linearibus inter juga solitariis iisque æquilongis, commissuræ bivittatæ, vittis marginalibus.

Crescit frequens in graminosis prope Belgaum.—*Caulis* 6–8 poll. altus, rami 1–2. *Petioli* 3 poll. longi; foliola pollicaria. *Flores* flavi.

A smooth, rigid, glaucous plant, with the leaves lying on the ground, and if not in flower or fruit hardly to be taken for an *Umbellifera*. Dr. Ritchie informs me in a note that the native name is "Kolund," that the root is eaten, and has the taste and odour of a carrot.

Nat. Ord. CRUCIFERÆ.

§ Pleurorhizeæ.

Cardamine *hirsuta*, Linn.

Var. *subumbellata**; semipedalis, tota hirsutula, caule dichotomo ramoso, foliis pinnatisectis, foliolis 5–7 petiolulatis ovatis obtusis *grosse crenatis* basi obliquis cuneatis terminali majore infimis multo minoribus, *floribus corymboso-fasciculatis* paucis 2–3 *lateralibus vel oppositifoliis*, pedicellis fructu brevioribus, siliquis linearibus acutis subpollicaribus valvis planis.

Flores flavi, minuti.

Crescit in collibus prope Belgaum; fl. et fr. Julio.—*C. corymbosæ*, Hook. fil., proxima, differt basi non ramosa, foliolis majoribus crenatis, floribus nunquam axillaribus.

A reference to Hook. Ic. no. 686, will give an excellent idea of the habit of this interesting little plant, for no nearer relationship or resemblance could exist than between the *Cardamine* of Campbell's Island and that just described. It was found on a wild wooded hill to the south-east of Belgaum, growing below trees; seed-stalk with wings, as in *Dentaria*.

Nat. Ord. ASCLEPIADEÆ.

Pergularieæ. § Hoyeæ.

Hoya *retusa*; parasitica, pendula, radicans, glabra, ramis longis teretibus filiformibus, foliis breve petiolatis linearibus *triquetris* apice retusis carnosis pallidis, floribus in pedunculo brevissimo axillari solitariis vel geminis fasciculatis longe pedicellatis, pedicellis filiformibus, calycis laciniis minimis acutis, corollæ albæ nitentis laciniis ovatis obtusiusculis margine brevissime velutino-fimbriatis, coronæ stamineæ foliolis depressis obovatis rubris.

Folia 1½–2 poll. longa, 2–2½ lin. lata, pagina superiore sulcata. Pedi-

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* In his MS. Mr. Dalzell had considered this a new species, and called it *C. Belgaumensis*. He rightly compares it with Dr. Hooker's *C. corymbosa* in Ic. Plant. t. 686, from Campbell's Island; but after an examination of numerous specimens of *C. hirsuta* from various parts of the world, Dr. Hooker is compelled to unite *C. corymbosa* as a variety to *hirsuta*; and the present state, with corymbose flowers and fruits (for the inflorescence does not *generally* elongate into a raceme even in fruit), along with specimens from other parts of India, Australia, etc., may come under the same variety.

celli 9 lin. longi. *Corolla* diam. 9 lin. In foliorum axillis sunt rami brevissimi, quorum internodia valde abbreviata, et folia *fasciculata* videntur.—Species singularis. Crescit in provincia Canara, et in sylvis "Dandilly" dictis; fl. temp. pluviali.

Heterostemma *urceolatum;* caule volubili purpureo puberulo, foliis herbaceis glabris petiolatis late ovatis acutis basi cordatis ibique glandula instructis trinerviis, umbellis (brevissime pedunculatis) paucifloris, pedicellis petiolo brevioribus, corolla *profunde urceolata* apice brevissime 5-fida, laciniis æstivatione valvatis sinubus dente minuto instructis.

Corolla 8–10 lin. longa, basi ventricosa, ore contracto, extus purpureo-rubescens, intus atro-purpureo, fundo sparsim villoso; corollæ *laciniæ* triangulares, 1–1½ lin. longæ, dentes inter lacinias minuti. *Corona staminea* 5-phylla, foliolis carnosis (gynostegium superantibus et circa eum cupulam efformantibus) apice horizontaliter dilatatis, marginis interioris basi prominula, gynostegium amplectente, apice dente introverso horizontali instructo. *Antheræ* appendice membranacea colorata terminatæ, polliniis in margine gynostegii applanati incumbentibus ovato-rotundatis parum compressis medio latere inferiore affixis brevissime stipitatis margine interiore ala pellucida instructis.

Crescit rara in collibus prope Belgaum; fl. Julio.

I was at first inclined to consider this rare plant as the type of a new genus, but on a closer examination I found it to differ in no respect from *Heterostemma*, except in the singular form of the corolla; and this opinion was not affected even by a comparison of it with living specimens of *H. Wallichii*, Wight. It agrees also with the genus in the small number of seeds in each ovary (twenty), for this is a peculiarity. The pollinia too are not to be mistaken, and are very correctly figured in Delessert, Ic. Select. vol. v. In *Marsdenia* we have the "corolla urceolata vel subrotata," and the same may be said of *Heterostemma.*

(To be continued.)

FLORULA HONGKONGENSIS: *an Enumeration of the Plants collected in the Island of Hong-Kong, by* Major J. G. Champion, 95*th Reg., the determinations revised and the new species described by* GEORGE BENTHAM, ESQ.

(*Continued from p.* 237.)

STYLIDIEÆ.

1. Stylidium *uliginosum*, Sw.—*S. Sinicum*, Hance, in Walp. Ann. vol. ii. p. 1030.

Moist situations, Hong-Kong. Upon a careful comparison with specimens sent by Dr. Gardner, of the original Ceylonese species, I cannot discover any difference. De Candolle's character, taken probably from Swartz's figure, is so far incorrect that the rosulate leaves are not in fact sessile; and it does not appear that the *S. Kunthii*, Wall., from Silhet and Mergui, is anything but a rather more robust variety, with the leaves usually somewhat larger and firmer.

CAMPANULACEÆ.

1. Piddingtonia *nummularia*, A. DC. Prodr. vol. vii. p. 341.

Common in rice-fields. Flowers purple, in February.

2. Lobelia *trigona*, Roxb.—*L. trigona* et *L. trialata*, A. DC. Prodr. vol. vii. p. 359, 360.

Not common in Hong-Kong. As suspected by De Candolle, the inspection of numerous specimens shows that the *L. trialata*, Ham., cannot be specifically distinguished from the common *L. trigona*. The leaves vary from cordate to almost acute at the base, sessile or petiolate.

The plant gathered by Mr. Hinds, which I had referred to *Lobelia Chinensis*, Lour., is not in Major Champion's collection; my specimen is however so poor that it is very doubtful whether my determination be correct.

3. Platycodon *grandiflorum*, A. DC. Monogr. Campan. p. 125, var. *Chinense*.—*P. Chinense*, Lindl. et Paxt. Fl. Gard. vol. ii. t. 61.

On the Chukchow side of the island only; flowering in June. The first flower I examined had a three-celled ovary, and I was disposed to consider it as a true *Wahlenbergia*, different from the Dahurian *Platycodon;* a further comparison however shows that it is more probably a mere variety, more rigid in habit and foliage. The number of cells of the ovary is usually five, as in the Dahurian plant; the position of these cells with relation to the calyx is still uncertain, and there are scarcely sufficient characters to separate *Platycodon* generically from the larger-flowered *Wahlenbergia*.

4. Wahlenbergia *agrestis*, A. DC. Monogr. Campan. p. 145.

Rice-fields, in March. Flowers pale blue. Some of Dr. Wallich's Silhet specimens distributed as *Campanula* (*Wahlenbergia*) *dehiscens*, agree precisely with our plant, but belong probably also to the *W. agrestis*, which only differs from *W. dehiscens* in having narrower leaves, and blue, not white, flowers.

GOODENIACEÆ.

1. Scævola *Lobelia*, Linn., var. *sericea.*—*S. sericea*, Forst., DC. Prodr. vol. vii. p. 506.

Rocks on the sea-shore, growing gregariously in large masses. Flowers in July. Brown (Prodr. p. 582) had already indicated the absence of any distinguishing character between *S. Lobelia* and *S. sericea* except the pubescence, which subsequent experience has shown to be very variable. De Vriese, who has since worked up the genus with great detail, has proved the identity of the common maritime species of the New World (*S. Plumieri*) with that of the Old World, and it is now evident that not only the several forms collected under one species by Hance (Walp. Ann. vol. ii. p. 1055), but also the *S. Plumieri*, *S. Thunbergii*, and *S. Senegalensis*, are all varieties of one widely-spread maritime species, for which however the old Linnæan name adopted by De Vriese, *S. Lobelia*, is quite sufficient, without the coining of the new one, *S. latevaga*, proposed by Hance.

ERICACEÆ.

1. Vaccinium *Chinense*, Champ., sp. n.; foliis sempervirentibus breviter petiolatis ovatis acutis serrulatis ramisque glabris, racemis simplicibus subsecundis, corollis urceolato-cylindraceis calycibusque cano-pubescentibus, staminibus inclusis, filamentis barbatis, antheris minute aristatis longe birostratis, bacca dissepimentis spuriis sub-10-loculari.—*Frutex* v. *arbor* parva, ramis adultioribus teretibus junioribus subangulatis. *Folia* 1–1½-pollicaria, acuminata, basi in petiolum 1–2 lin. longum angustata, demum coriacea. *Racemi* axil-

lares v. subterminales, raro pollicem longi, incurvi, juniores subæquales, demum floribus cernuis subsecundi. *Bracteæ* nunc foliaceæ, oblongo-lanceolatæ, 2–3 lin. longæ, plus minus persistentes, nunc lineares, parvæ, caducæ. *Bracteolæ* minutæ. *Flores* vix 3 lin. longi. *Calycis* dentes parvi, acuti. *Corolla* alba, fere cylindrica, dentibus minimis reflexis. *Genitalia* corollam subæquantia. *Antherarum* tubuli loculis ipsis subtriplo longiores; aristæ dorsales latitudine antherarum breviores, patentes, sursum incurvæ. *Discus* epigynus crassiusculus, villosus. *Ovarium* 5-loculare, ovulis in loculis paucis. *Bacca* pisi minoris magnitudine, cærulea, dissepimentis spuriis intrusis sub-10-loculare, seminibus paucis.

Hong-Kong. A pretty species, flowering in July and August, and ripening its fruit in September. I should have taken it for the *V. bracteatum*, Thunb., but that Zuccarini, in his detailed description of that species (Pl. Jap. Fam. Nat. sect. ii. p. 6), besides differences in the size of the flowers and leaves, and in the length of the racemes and petioles, states expressly that the anthers are without aristæ, whereas I have found them in all the flowers I have examined, although so small that they may have escaped Zuccarini's observation. The structure of the ovary and fruit would place this plant next to the sections *Batodendron* and *Cyanococcus* of Asa Gray, with neither of which groupes however do the other characters precisely agree.

2. Azalea *Indica*, Linn.

Abundant and growing most luxuriantly on the banks of streams.

3. Azalea *squamata*, Lindl. Journ. Hort. Soc. vol. i. p. 152.—Bot. Reg. 1847, t. 3.

Abundant on the hills.

4. Azalea *myrtifolia*, Champ. in Bot. Mag. sub t. 4609; foliis petiolatis ovali-oblongis ellipticisve apice emarginatis cum mucrone calloso basi acutis subglabris nitidis, gemmis imbricato-squamatis unifloris, pedunculis hispidis, floribus pentandris, sepalis orbiculatis ciliato-hispidis, corolla sub-5-partita laciniis obovali-oblongis.

On the Black Mountain, on rocks with *A. squamata* and *A. Indica*, where it was first seen by Col. Eyre in March 1849. In the article of the 'Botanical Magazine' quoted above will be found a detailed description; the *A. ovata*, Lindl., is there inserted by mistake as a Hong-Kong plant, the article *A. myrtifolia* in the manuscript having been intended to be substituted for that of *A. ovata*.

The *Azalea ramentacea*, described by Lindley (Journ. Hort. Soc. vol. iv. p. 291), is believed to have come from Hong-Kong, but I have seen no specimens from thence.

5. Rhododendron *Championæ*, Hook. Bot. Mag. t. 4609.

Ravines of Mount Victoria. The flowers are either white with the centre ochre with lurid spots, or pinkish with ochre or lurid spots.

Col. Eyre is said to have since discovered another new *Rhododendron* on Mount Gough, which I have not seen.

6. Enkyanthus *quinqueflorus*, Lour., var. *brevicalyx.*—*E. reticulatus*, Lindl.—DC. Prodr. vol. vii. p. 733.

Abundant on the hills. There are very fine shrubs of it in the Happy Valley woods.

The *Enkyanthus uniflorus*, which I formerly described from Hind's specimens, must be suppressed, having been founded on a mistake. Some imperfect flowers of *E. quinqueflorus* had been mixed with imperfect specimens of *Azalea squamata*.

UTRICULARINEÆ.

The marshes of Hong-Kong contain at least four or five *Utriculariæ*, which appear however all to be identical with widely-spread East Indian species. Of these, four are in Major Champion's collection, viz. 1. *U. diantha*, Rœm. et Schult., Wight, Ic. t. 1569; 2. *U. humilis*, Vahl, Wight, Ic. t. 1572; 3. *U. cærulea*, Linn., Wight, Ic. t. 1583; and 4. (if I am not mistaken in the determination) *U. uliginosa*, Vahl, but the specimens of the latter are old and have lost their leaves, and the identification of *Utriculariæ* from dried specimens is at all times exceedingly difficult. To the above must be added the *U. extensa*, Hance, in Walp. Ann. vol. iii. p. 3, which is evidently distinct from any of the foregoing, but which, from the description given, must be closely allied to, if not identical with, the common East Indian *U. fasciculata*, Roxb.

PRIMULACEÆ.

1. Lysimachia *alpestris*, Champ., sp. n.; piloso-hispida, subacaulis, foliis rosulatis oblongo-spathulatis subobovatisve, pedunculis unifloris v. imis racemiferis, corolla late rotata, filamentis monadelphis, sterilibus obsoletis.—*Caulis* perennis, nunc brevissimus, foliis radicalibus rosulatis obtectus, nunc quasi prolifer ramulos seu stolones emittit

1–2-pollicares, apice rosulato-foliiferos. *Folia* 1–1½ poll. longa, 3–5 lin. lata, basi in petiolum plus minus angustata, margine integerrima et revoluta, apice obtuso, utrinque pilis longis articulatis hyalinis hispida et glandulis minutis conspersa, supra inter pilos glabra et demum granuloso-verrucosa, subtus furfure minuta pallentia v. rufescentia. *Pedunculi* folia æquantes, uti calyces hispidi et glanduliferi, inferiores sæpe scapiformes v. stoloniformes apice racemum brevissimum v. fasciculum florum foliis intermixtum ferunt. *Sepala* oblonga, acuminata, 2 lin. longa. *Corolla* flava, 8–9 lin. diametro, tubo brevissimo, limbo rotato 5-partito, laciniis late ovatis minute fimbriatis. *Filamenta* brevia, ultra medium connata in cupulam inter stamina obscure et obtuse 5-dentatam. *Antheræ* oblongæ. *Ovarium* uniloculare, placenta globosa multiovulata. *Capsula* calyce brevior, globosa, valvulis 5 integris dehiscens.

In subalpine situations, flowering in April. This very distinct species appears in some measure to connect *Androsace* with *Lysimachia*, having somewhat of the hābit of the former, with the inflorescence and floral characters of *Lysimachia*.

MYRSINEÆ.

1. Mæsa *Sinensis*, A. DC. Prod. vol. viii. p. 82, var. *glabrior*.

Very common in Hong-Kong, flowering early in spring. Fortune's specimens, n. 151, agree more exactly with De Candolle's character; Major Champion's are less hairy, and the panicles shorter; but all the species of this genus are very variable.

2. Mæsa *coriacea*, Champ., sp. n.; glaberrima, foliis elliptico-oblongis integerrimis v. remote dentatis coriaceis margine revolutis, paniculis petiolum brevem æquantibus rarius duplo longioribus, bracteis ovatis, bracteolis lobisque calycinis obtusissimis, drupa globosa obtusa.—*Folia* 3–4-pollicaria, breviter et obtuse acuminata, basi acuta v. obtusiuscula, petiolo 2–4-lineari, supra demum nitidula, punctis pellucidis minutis vix sub lente conspicuis, costa venisque primariis paucis supra impressis subtus elevatis. *Bracteæ* squamæformes, late ovatæ; bracteolæ orbiculatæ v. fere reniformes. *Calycis* laciniæ orbiculatæ, longitudinaliter glanduloso-lineatæ. *Corolla* fere 2 lin. longa, alba, tubo lato calyce subduplo longiore, limbi laciniis rotundatis vix crenulatis. *Ovarium* calyci adnatum, disco lato depresso-pyramidato. *Drupa* 2 lin. diametro.

Equally common with the *M. Sinensis*, flowering in spring. It is readily distinguished from all species known to me by the leathery consistence of the leaves, and the short inflorescence. I formerly referred it to the *M. nemoralis*, A. DC., but that species appears to have broader and thinner leaves, and a differently shaped fruit.

3. Embelia *Ribes*, Burm.—A. DC. Prod. vol. viii. p. 85.

Common in ravines of Mount Victoria and the Happy Valley woods.

4. Samara *obovata*.—*Choripetalum obovatum*, Benth. in Lond. Journ. Bot. vol. i. p. 490.—*C. Benthamianum*, Hance in Walp. Ann. Bot. vol. iii. p. 10.

A common shrub at West Point and Victoria Peak. Flowers small, yellowish-white, scentless. The genus *Choripetalum*, DC., is reduced to *Samara*, Linn., on the authority of Arnott, as quoted in Wight, Illustr. vol. ii. p. 139, who has shown that the plate of Burmann, which has misled modern botanists, was erroneously referred by Linnæus to his *Samara*. The leaves in our species vary from obovate to oblong, but they have so frequently a tendency to the obovate form that I see no reason for changing the specific name originally given.

5. Myrsine *capitellata*, Wall.—A. DC. Prod. vol. viii. p. 94, var. *angustifolia*.

Hong-Kong, growing to a tree, but flowers (in February) also as a shrub. This form only differs from the var. *β. parvifolia*, A. DC., in the leaves being rather longer and narrower. The Javanese plant referred by Zollinger and Moritzi to the *M. avenis*, and several other supposed Eastern species, must be added to the varieties of this plant, if the Silhet, Nilgherry, and Ceylon forms already united with it are really mere varieties of the original large-leaved Nepalese *M. capitellata*.

6. Ardisia *pauciflora*, Heyne.—A. DC. Prod. vol. viii. p. 127.

In ravines. Shrubby. Flowers small, white, with orange dots. I had at first considered this as new, but on a closer examination I can find nothing to distinguish it from East Indian specimens of *A. pauciflora*.

7. Ardisia *crispa*, A. DC. Prod. vol. viii. p. 134.

Victoria Peak and near the Buddhist Temple, rare, flowering in July.

8. Ardisia *punctata*, Lindl.—A. DC. Prod. vol. viii. p. 135.

Abundant on Victoria Peak, flowering in June.

9. Ardisia *Japonica*, Blume.—A. DC. Prod. vol. viii. p. 135.

In the bed of a ravine of Mount Victoria in July.

10. Ardisia *primulæfolia*, Gardn. et Champ. in Kew Journ. Bot. vol. i. p. 324.

In grassy places in ravines, Mount Victoria, also Black Mountain, Mounts Parker and Gough, and elsewhere, but rare. When growing it has quite the habit of a Primrose.

11. Ægiceras *fragrans*, Kœn.

Salt-water marshes. Flowers very fragrant in March and April; fruits in May.

SAPOTACEÆ.

1. Sideroxylon *Wightianum*, Hook. et Arn. Bot. Beech. p. 196. t. 41.

Happy Valley Woods and Mount Victoria. Flowers whitish, the lobes of the corolla and sterile stamens rather broader than they are figured by Hooker, and somewhat cordate at the base. Fruit black, ovoid or oblong, half an inch long. The original *S. Wightianum*, Wall., a very different plant, has been shown by A. De Candolle to be a species of *Isonandra*.

EBENACEÆ.

1. Rospidios *vaccinioides*, A. DC. Prod. vol. viii. p. 220.

Very abundant all over the island, and much resembles our common Box in habit. Flowers in June.

2. Diospyros *Morrisiana*, Hance in Walp. Ann. Bot. vol. iii. p. 14.

Mounts Victoria, Gough, and Parker. The male flowers, which appear in May, agree with Hance's character; the female are unknown. The fruit, gathered in December, is somewhat oblong, or nearly globose, yellow, edible, about 8 lines in diameter, 4-celled, each cell 1-seeded. Seeds chestnut-coloured, oval-oblong, compressed.

3. Diospyros *eriantha*, Champ., sp. n.; subarborea, foliis subbifariis oblongo-lanceolatis supra nitidis subtus ad venas ramulisque pilosis, floribus masculis subsessilibus 1–2-nis bracteatis tetrameris, corolla extus dense pilosa tubo angusto, staminibus 16, fœmineis solitariis, ovario biloculari, stylis ad medium connatis integris.—*Ramuli* novelli plus minus pilis ferrugineis appressis vestiti, demum fere glabrati. *Gemmarum* squamæ numerosæ, bifariam imbricatæ, pilis ferrugineo-sericeis vestitæ. *Folia* breviter petiolata, 2½–4 poll. longa, ¾–1 poll. lata, acuminata, basi rotundata v. acutiuscula, tenuiter coriacea, costa venisque primariis utrinsecus 4–5 subtus valde prominentibus et pilis

ferrugineis nunc copiosis longis nunc parvis raris indutis. *Pedunculi* masculi brevissimi, squamis imbricatis ferrugineo-pilosis obtecti. *Calyces* dense et molliter pilosi, fere 2 lin. longi, lobis 4 latis acutiusculis. *Corolla* alba, pariter villosa, tubo cylindrico calyce paulo longiore, lobis 4 ovatis. *Stamina* 16, 4-seriata; filamenta interiora brevia, exteriora elongata; antheræ acuminatæ. *Ovarii* abortivi rudimentum parvum. *Fl. fœminei: Corolla* ignota. *Ovarium* (ex Champ.) villosum, biloculare, ovulis in loculis solitariis pendulis. *Styli* ad medium connati. *Bacca* exsucca, oblonga, pollice brevior, obtusa, extus pilosa, abortu monosperma.

Happy Valley woods; flowers in July and August; fruits in January. With some general resemblance in foliage to the *D. stricta*, Roxb., and to the *Gunisanthes pilosula*, A. DC., this species is very different in structure from either.

STYRACEÆ*.

1. Symplocos *Japonica*, A. DC. Prod. vol. viii. p. 255, var.? *crassifolia;* foliis integerrimis, calycis lobis obtusis eciliatis.

Mount Victoria. Shrubby. The inflorescence is in subsessile fascicles, as in *S. tinctoria;* the leaves thick and shining, 2½ to 3½ inches long, and about 1½ broad. The character of *S. Japonica*, as given in the 'Prodromus,' certainly does not agree with our specimens, especially in the small size attributed to the leaves, their serrated margin, the pubescent racemes, and the acute ciliate calyces; but the specimen of *S. lucida*, Sieb. et Zucc. (which is the *S. Japonica*, A. DC.) communicated to me by Zuccarini himself, has the inflorescence and calyx of our Hong-Kong plant; the leaves are intermediate in size, with here and there a few small indentures, so that most probably all these forms belong to one variable species, nearer allied to the American *S. tinctoria* than to any Asiatic species.

2. Symplocos (Hopea) *microcarpa*, Champ., sp. n.; glaberrima, foliis elliptico-oblongis longe acuminatis vix crenulatis basi acutis, racemis axillaribus simplicibus v. a basi trifurcatis folio pluries brevioribus, calycis lobis latis obtusis, drupa parva subglobosa.—*Arbor* parva, affinis quodammodo *S. caudatæ*, Wall. *Rami* tenues. *Folia* 2–4

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* I am aware that Mr. Miers excludes *Symplocos* from *Styraceæ*, but his views of its affinities are not yet published in sufficient detail to justify the disturbing De Candolle's arrangement in a partial Florula like the present one.

poll. longa, $\frac{3}{4}$–$1\frac{1}{4}$ poll. lata, acumine quam in *S. caudata* breviore, subcoriacea, nitidula, petiolo brevissimo. *Racemi* axillares, subsemipollicares, sæpius simplices, rigiduli. *Flores* in genere parvi, sessiles, haud crebri. *Bracteæ* orbiculatæ v. reniformes, squamæformes, sæpe ciliolatæ. *Calycis* tubus brevissimus, laciniæ breviter orbiculatæ, post anthesin inflexæ. *Petala* vix linea longiora, oblonga, ima basi cum staminibus in annulum brevem connata. *Filamenta* non manifeste pentadelpha. *Ovarium* triloculare v. interdum biloculare. *Stylus* corollam æquans, stigmate capitato vix lobato. *Drupa* globosa v. ovoideo-globosa, calycis limbo coronata, vix 2 lin. diametro, abortu monosperma. *Semina* perfecta non vidi.

Happy Valley woods.

The *Symplocos sinica*, Ker., so frequently sent from the adjoining continent, does not appear to have been as yet gathered in Hong-Kong.

3. Styrax *suberifolium*, Hook. et Arn. Bot. Beech. p. 196. t. 40.

Rather common, forming a shrub or small tree. The flowers, appearing in May, vary, as in other species, in the number of parts, being as frequently pentamerous as tetramerous; they are white, and sweet-scented. The fruit, about the size of a hazel-nut, splits into three valves, from the apex to the base. The seed, usually solitary, is nearly globose.

4. Styrax *odoratissimum*, Champ., sp. n.; ramulis minute puberulis, foliis ovato-oblongis acuminatis subintegerrimis basi acutiusculis glabris, pedunculis 1–2-floris geminisve supra-axillaribus summis racemosis, calyce campanulato apice membranaceo integro v. irregulariter lobato, drupa oblique ovoidea acuminata a basi dehiscente.—*Folia* membranacea, subtripollicaria, iis *S. Porteriani* simillima nisi glabriora. *Pedicelli* plerique calyce longiores, uti calyces et corollæ pilis stellatis canescentes. *Flores* nutantes iis *S. officinalis* paulo minores. *Bracteæ* minutæ. *Staminum* filamenta complanata, ciliata, juniora basi connata, supra medium geniculata. *Antheræ* lineares, in flore aperto apice recurvæ, breviter acuminatæ, pilis stellatis conspersæ. *Ovarium* ultra medium calyci adnatum; placenta centralis, crassa, a parietibus libera, sed alas 3 emittens cavitatem in loculos 3 incompletos dividentes. *Ovula* in loculis spuriis 6, biserialia, omnia certe adscendentia. *Drupa* 5 lin. longa, basi rotundata et brevissime tantum adnata, apice styli basi oblique acuminata. *Semen* oblique ovoideum.

Ravines of Mount Victoria. A most beautiful, moderate-sized shrub, by no means so common as the *S. suberifolium*, and well deserving introduction into this country. It has much the appearance of *Deutzia scabra;* its flowers, in April, are most deliciously and delicately scented, much resembling the perfume of violets. It is evidently allied to *S. virgatum* and *S. Porterianum*, but the leaves are much smoother, the flowers longer, etc. The ovules are all erect, as described by Zuccarini in the *S. Japonicum*, a species in other respects differing considerably from ours. The *S. agreste*, Don, or *Cyrta agrestis*, Lour., must also be nearly allied to *S. odoratissimum*, but the fruit is said to be attenuated at the base as well as at the apex. De Candolle was indeed disposed to reject the *Cyrta* altogether from *Styrax*, as having, according to Loureiro, the "germen superum," but in *Styrax* itself the ovary is, to the present day, as frequently described as superior after Jussieu, as inferior after Linnæus.

(*To be continued.*)

Letter from MR. SPRUCE *to* GEORGE BENTHAM, ESQ.

S. Gabriel da Cachoeira, Rio Negro, April 15, 1852.

The last Correio brought me your letter of August 16, 1851, in which you inform me of the safe arrival of my cases. My principal object in writing now is to inform you that I left a case of plants at Uanauáca, below the falls of Saõ Gabriel, to be despatched to Pará by the first opportunity, and I expect it will be forwarded about this time. In future you will probably receive my sendings in but small quantities at a time, the smallness of the vessels that navigate these upper waters not allowing of above one or two smallish cases being sent in them; but you can of course keep them by you until you have 300 or 400 species to distribute.

I found it a great advantage travelling in my own canoe. I had it fitted up so that I could work comfortably, and stow away my plants when dried, besides being able to dry my paper on the top of the cabins when it was inconvenient to stop in the middle of the day. I was also master of my own movements,—could stop where and when I liked,—save that it was necessary to keep the Indians in good humour. When the weather was cool they did not like to be interrupted in pulling, but when they were toiling under a hot sun they rather liked a stoppage now and then. Towards the end of the voyage they got into the habit of peering into the trees as we went along in the hot afternoons, and would call out to me—busy among my papers in the cabin—"O patraõ! aikué potéra poranga" ("Patron! here's a pretty flower"). I of course turned out to see if it was anything new, as it often proved to be.

Lecythides were very numerous, and I had not time either to gather or preserve all I saw. I hoped to get some of them here in fruit, but I cannot see a single *Lecythis* in the Gapó of the falls.

The *Leguminosæ*, nos. 1801, 1891, and 1937, were frequent nearly all the way up, and I saw forms which I could not tell to which of these they should be referred. If I had been walking on a mountain-side it would have been easy to have gathered a specimen or two of these apparently intermediate forms, but when a large canoe had to be stopped, and a tree to be climbed or cut down for this purpose, involving a considerable waste of time, I felt it was not worth the trouble.

The *Dicorynia*, 1918, was frequent and very ornamental, from a little below Barcellos nearly to the base of the falls. About the falls its place is supplied by another Cæsalpineous tree (2077), which I gathered in flower, and hope to get also with ripe fruit.

Shortly after I reached here my montaria broke from its moorings one night, and went over the falls. I sent my two men in quest of it: they were out all night, and returned next day with the montaria, which an honest Indian had found, almost uninjured, wedged between two rocks; they brought me also a branch of a tree in flower, which proved to be a small-leaved *Dicorynia*. Three or four days afterwards I went down the falls to get more of it, but the flowers were nearly all gone, and, strange to say, we could find only that one tree from which the men had plucked the branch.

Gustavias were tolerably frequent, but possibly all reducible to one species. It was scarcely possible to preserve their flowers, on account of the number of caterpillars bred in them.

It would surprise most people to be told that *Proteaceæ* are so numerous on the shores of the Rio Negro (in individuals, not in species) as to give a marked character to the vegetation. I am acquainted with three or four *Proteaceæ* (*Andriopetala*) of the *terra firma*, but I have never been able to find them in flower or fruit. All that I have hitherto gathered (including the one from Santarem) are of the Gapó; all are remarkable for the leaves of the young plants being polymorphous—pinnate, pinnatifid, or laciniated,—though this is not noted by Endlicher under *Andriopetalum*.

The finest tree on the Rio Negro is no. 1957, apparently an undescribed *Bignoniacea*. Notwithstanding its inferior ovary, I think its affinity is clearly with *Bignoniaceæ*. If the genus be new, I hope you will allow me to call it *Henriquezia*, in honour of Signor Henrique Antonij, a native of Leghorn, but for more than thirty years settled at the Barra do Rio Negro, where he has constantly rendered every assistance to scientific and other travellers during that period, as you may see by referring to all the works that have been lately written respecting these rivers.

An *Ochnacea*, no. 2012, which seems to be new, I have ventured to dedicate to my friend Mr. A. Wallace, the entomologist, who, besides his natural history pursuits, has found time to collect much curious and valuable information respecting the Rio Negro and its aboriginal inhabitants, which, as he is about to return to England, he will probably shortly give to the world.

Near St. Isabel I got another large *Cajú* (Cashew-tree), with sweet-scented flowers, which I have called *Anacardium suaveolens*.

My Indians came from Uanauáca, and were only engaged to take me thus far up the river. Uanauáca is but a single sitio, the most flourishing on the Rio Negro, belonging to a Senhor Manoel Jacinto da Souza, who was Commandant of Saõ Gabriel when Schomburgk passed down the Rio Negro. Whilst waiting here, comes the Tochána (chief) of Saõ Jeronymo, on the Rio-Uaupés, with a dozen naked Indians, to trade with Manoel Jacinto, and I seized the opportunity for continuing my voyage by their aid. My departure was still delayed a few days (I was there about three weeks in all) by an attack of fever, which happily proved only temporary.

At Uanauáca I was employed in packing my plants into other paper, and writing labels to them. I also varied my occupation by a few rambles, one of which, in particular, to an inundated campo by a lake on the opposite (south) side of the river, was productive of much novelty. I was glad to get, at Uanauáca, a Cecropiaceous tree, of whose fruit I had heard much spoken in the Barra, and which is frequent near sitios through all the upper Rio-Negro—the great *Cocura*: it seems a species of *Pourouma*, Aubl.; and the small *Cocura* (*Cocura-í*), sent from the Barra, is probably of the same genus, though I formerly thought it an undescribed genus.

Above Uanauáca all was *rapids;* indeed there had been little else from St. Isabel, and it still took me several days to get to the base of the great falls. To ascend the latter took three mortal days and nights, and I can assure you that cataracts are far more delightful things to look at than to go up or down. We had some narrow escapes, and contrived to make a hole in the keel of the canoe, which kept my men baling out water the whole of the last night. The principal fall is just below Saõ Gabriel, and its roar is ever in my ear; but up to the mouth of the Uaupés the river is still nothing but falls and rapids. I went thus far (to Saõ Joaquim) shortly after reaching Saõ Gabriel, in order to visit Mr. Wallace, who was brought to death's door by "Rio Negro fever," whose effects will probably long hang on him, though he has happily got about again.

From Uanauáca upwards it was scarcely possible to do anything, on account of the rapids. It was necessary to fasten everything to the sides of the tolda, to prevent their falling one on the other; nor was it possible to dry any paper on the outside. It is not very pleasant work here to be always among cataracts in my excursions. I have been once the whole length of the falls, and up again: I was out four days, but two of them were lost time. I made my station at the house of the pilot of the falls, at the foot of the latter, and arrived just in time to see the commencement of one of their great "festas." Much against my will I was compelled also to see the end of it, for no one would stir until after two days of drinking and two nights of dancing. I was interested to hear the legend of the discovery of the Mandiocca-root, sung in the Barré language; but this was poor consolation for such a loss of time, and you may imagine how I fretted in my imprisonment in a small rocky island, begirt with foaming waters, where I could not find a single flower that I had not already gathered. In returning, with four men, we passed all the falls without accident, until reaching the great fall above mentioned; here, in dragging the boat up the rocks it filled with water, and a large parcel of plants in paper, about three feet high, was so completely soaked that two men could scarcely carry it. Two large vascula full of fresh specimens floated out, but we secured them, and I lost only a few plants, that were loose in a basket. I was much fatigued, having been on the water from six in the morning till five in the afternoon, yet I had now the soaked parcel to open out and the plants to transfer to dry paper, which occupied me until midnight. To some of them the mischief was already done—the leaves had begun to disarticulate; but you must take the specimens as they are, as I shall probably not find the same again. Whatever advantages Saõ Gabriel may have as a station, on account of its interesting vegetation, it has disadvantages so great that if I had commenced my South American collections here I dare say I should have given them up in despair. The house I am in is very old: the thatch is stocked with rats, vampires, scorpions, cockroaches, and other pests to society; the floor (being simply mother earth) is undermined by Saüba ants, with whom I have had some terrible contests: in one night they carried off as much farinha as I could eat in a month; then they found out my dried plants, and began to cut them up and carry them off. I have burnt them, smoked them, drowned them, trod on them, and in short retaliated in every possible way, so that at this moment I believe not a Saüba dares show its face inside the house; but they demand my constant vigilance. Then the termites, which are more insidious in their approaches, have covered ways along every post and beam: they have already eaten up a towel, and made their way into a deal packing-case, where fortunately they found nothing to their taste. But the greatest nuisance at Saõ Gabriel is one I had not foreseen. Almost the sole inhabitants are the soldiers of the garrison, and do you know how the armies of Brazil are recruited? When a man commits a crime which entitles him to transportation, he is enlisted and marched off to one of the frontier posts. Thus, of the fourteen men composing the garrison of Saõ Gabriel, there is not one who has not committed some serious crime, and at least half of them are murderers. Judge with what security I can leave my house for a few days: it has already been twice entered during my absence, and about two gallons of rum, a quantity of molasses and vinegar, and some other things, stolen from it.

I have in the house with me two Indians, a hunter and a fisherman. One at least is an absolute necessity, to prevent my dying of hunger, for here is nothing to be bought, not even an egg or a banana; for farinha I have had to send to the Rio Uaupés. The hunter I brought with me from the Barra: he is an excellent shot, and keeps me mostly well supplied with game; he is also useful to me for climbing trees and rowing, at both of which he cannot be excelled; but he is a terrible fellow for cashaça, like indeed most of his race. I induced one of the Uaupé Indians, who came with me from Uanauáca, to become my fisherman: he was with me about two months, when the commandant of the fort seized him for the service of the courier to the Barra. Indians to row the courier's canoe are obtained in this way:—a detachment of soldiers is sent by night to enter the sitios and seize as many men as are wanted, who are forthwith clapped into prison, and there kept until the day of sailing—in irons, if they make any resistance. The voyage averages fifty days, and these poor fellows receive neither pay nor even food for the whole of this time. An Indian however never dies of hunger when his brother Indian has food, and these men call at the nearest sitio to replenish their supply of farinha from time to time. But such treatment is a great disgrace to the Government, and it is not to be wondered at that the Indians hide themselves in the forests when they get wit that the courier is about to be despatched. Within these few days I have been fortunate enough to engage another fisherman. It is worth my while to keep these two men, solely for the sake of accompanying me in my excursions, for it is not safe to venture among the falls with fewer than two oars.

From St. Isabel to the mouth of the Uaupés the tops of the rocks were covered with *Podostemeæ*, but all dead, the water having long ago left them. When the river begins to go down,—that is, after midsummer,—they are in perfection.

The serras around Saõ Gabriel were a great attraction to my establishing myself here. I began with the lowest, which rises at the back of Saõ Gabriel. In streams about its base I got several Ferns, but on the serra itself nothing. I then undertook to ascend a serra which appears in front, on the right bank, when one goes half a day's journey up the river. On Schomburgk's map it is marked Mount Wauarimapan, but no one knows it by that name; the Indian name is *Urucú-iuitéra* (or the Hill of Anatto), but it is more generally known by its Portuguese name, *Serra do Gama*. I established myself at the nearest sitio, and set some Indians to work to cut a road through the forest—a necessary preliminary, as no one living had ascended the serra. I succeeded in reaching the very highest point of the serra, but it cost me above a week; and here also the serra itself proved barren of novelty, being clad with lofty forest to its summit, and destitute of water save near its base. It is 1500 feet high above the river at Saõ Gabriel. All these serras are huge masses of granite, rising abruptly out of the plain. You have no idea what work it is climbing them; towards the base they are strewed with blocks as big as churches, all enveloped in forest, and netted over with twiners. In a "Caa-tinga" at the base of the Serra do Gama I made an interesting collection. There are also other Caa-tingas, or "white forests," in the neighbourhood; the soil a thin covering of white sand over granite; the trees low; twiners scarcely any; trunks hung with Ferns and Orchises, branches with *Hepaticæ.* The Ferns very interesting; the Orchises numerous, but insignificant; the *Hepaticæ* few in species. Scarcely any of the trees are now in flower, but they seem all peculiar.

I am now entering another great Guaraná country. I have seen a few plants in the sitios, but it is across the frontier that it is cultivated and used in the greatest quantity. The Barré Indians of Venezuela drink it in immense quantities, especially the first thing in a morning, in place of coffee, and they use only the fresh berry, grated, without sugar. Their name for it is *Cupana* (perhaps Aublet's name *Cupania*, applied to other plants of the same family, might be traced to the same root). I have got a few specimens of Guaraná, and shall be able to get more. It seems to flower and fruit all the year round, but no fruit is allowed to ripen, as the people gather it while yet green; I am not certain that it is the same as the Guaraná of the Maués, but I believe it to be so. The stem twines, but I have not seen any tendrils.

The river has been rising and falling ever since I reached Saõ Gabriel (January 15), but on the whole gaining. The strength of the rainy season is now coming on (there is never any dry season, properly speaking), and will continue unabated until the river is full, about St. John's day: until past that period I am a fixture here, and afterwards my plans are uncertain. The Commandante of Marabitanas invites me to go up the Içanna with him, and visit the Serra de Tunuhy, but I have had some experience of travelling in other people's boats, and find it more agreeable, and even less expensive, travelling in my own. On the voyage from Santarem to the Barra the rum, coffee, and sugar for every person on board was furnished by me, and the captain lived entirely at my expense; there was besides my own feed and Mr. King's, and his wages of a milrei per day, and this for a space of sixty-three days, and under circumstances which almost rendered collecting impossible. These so-called "negociantes" of the Amazon correspond to our hucksters in England: poorer devils you could not find in any country, and they are glad to lay hold on a passenger, whom they make to bear nearly all the expense of the voyage.

My own wishes point now to the Uaupés, a large river, which is undoubtedly the main branch of the Rio Negro, and whose source cannot be far from Santa Fé de Bogota. The general course of the Rio Negro is easterly (not southerly, as is generally said), and nearly parallel to that of the Japurá; the Indians frequently cross from one to the other. I suppose I may have got some plants on the Rio Negro which Martius found on the Japurá. The sources of the Rio Negro are well known; they are not much above Thomo, and all the ramifications represented on maps extending westward are imaginary. I have conversed with several people who have crossed from the upper part of the Içanna by a short portage to the Guaviare (a branch of the Orinoco), without encountering any tributary of the Rio Negro.

The ancient "Capitania do Rio Negro" has lately been elevated into a province, under the name of "Provincia do Amazonas," with the Barra for its capital. They talk of making the Barra a "porto do mar," and allowing foreign vessels to trade to it; but this is too good news to be true—the Brazilians have a mortal fear of an English steamer entering the Amazon.

BOTANICAL INFORMATION.

Paper of Daphne Laurel (*Spurge Laurel*).

Now that public attention is so much directed to the obtaining useful fibre from various plants, whether for textiles or for our paper manufactories, it may not be uninteresting to our readers to know that paper has been prepared from the common European Spurge-Laurel (*Daphne Laureola*). In the north of India, allied species of *Daphne* (*Daphne cannabina*, *Daphne Gardneri*, etc.), have been, perhaps for centuries, employed by the natives in the preparation of a strong and useful paper for the ordinary purposes of the country. Dr. Wallich has recently presented to our Museum of Economic Botany at Kew, together with many other valuable articles, specimens of paper prepared by Professor Joannes Brignoli v. Brunhoff, of the University of Modena, accompanied by the following note, addressed to Dr. Wallich in 1839:—"Je ne sais pas si vous avez connaissance que j'ai suivi en Europe le procédé de Kamaon pour obtenir de papier inattaquable des tignes avec la *Daphne Laureola*, au lieu de la *Daphne cannabina*. Je vous en remets deux petits échantillons." This paper exactly resembles, in its colour, texture, and strength, the Indian paper above mentioned.

GYNERIUM SACCHAROIDES.

Even in our own gardens, we are now familiar with an exceedingly beautiful species of *Gynerium*, a Grass or Reed, native of South Brazil, but capable of bearing the winter unharmed with us, the *Gynerium argenteum* of Nees von Esenbeck (*Arundo Sellona*, Schultes). Our flowering plants are at this moment (October 18th) eleven feet high; the foliage six feet long; the flower-stalks, with their large silvery panicles, many from the same root, waving with every breath of wind, four to six feet above the leaves.—A still more remarkable Reed, especially as regards the large size of the panicle, though wanting the silvery hue of the *argenteum*, is the *Gynerium saccharoides* of Humboldt and Bonpland, who figured and described it in the 'Plantes Equinoxiales,' vol. ii. p. 112, t. 215, from specimens gathered in Cumana: "Cette Graminée (they say) se trouve abondamment sur les rives du Manzanarès, près de Cumana, dans la province de la Nouvelle-Andalousie, et qui, par son port, est un des plus beaux ornemens de la végétation des Tropiques. La panicule a une forme très-élégante: elle est surtout d'un effet singulièrement pittoresque quand elle est agitée par les vents." Messrs. Richard and Poiteau found the same plant in the lesser Antilles and in St. Domingo, where the colonists cut the stems annually, and they are used as lathes (*lattes*) to support the tiles (*tuiles*) with which the dwellings are covered. There can be little doubt that this is the same plant that is described by Aublet (Plantes de la Guiane Françoise, vol. i. p. 50), under the name of *Saccharum sagittatum* (Kou-rou-mary, or Roseau à flèches of Barrère, Fr. Equinox. p. 19), of which that author says, "Les tiges mâchées rendent un suc doux et sucré. L'extrémité de la tige porte les fleurs; cette partie de la tige sert pour faire les flèches." It is probably the Arrow-Reed of Tropical America.

We were particularly gratified to receive, as we have just done, from Dr. Imray of "Roseau," Dominica, fine flowering specimens of this same Reed, and thus ascertaining that it is the identical Reed (*roseau*) that gave a name to the capital of the island, now, being in possession of the British, more generally called Charlotte's Town. "I have sent you," writes Dr. Imray, "by the brig Creole, a case containing flowers of a species of Reed, here called, *par excellence*, 'the Roseau.' The town derives its name from it, the site being covered with the plant when the island was settled. The flowers will keep uninjured for five or six years, and I think you will consider them very pretty. The ladies here (Dominica) use them as ornaments in their drawing-rooms, —two or more of the reeds, with their graceful, large, and drooping panicles of dry flowers, forming a kind of pointed arch above a mirror or painting, or anything else; and really the effect is very good." Fine specimens of this stately grass, from Dr. Imray, are deposited in the Museum of the Royal Gardens.

Notes on the Botany and on the Government Gardens of Bombay; by DR. J. E. STOCKS, Conservator of Forests and Superintendent of Botanic Gardens, Bombay Establishment: extracted from a letter addressed to the Editor; dated Sattara, May 7th, 1852.

About the flora of this Presidency I can of course say nothing at present. Three months is not quite enough to enable one to take in an idea of a vegetation from Goa to Deesa (north and south), and from Bombay to Ahmednuggur. But Dr. Gibson is the man to tell you all about our side, knowing, as he does, not only every part of it, but almost every village, and he could give as clear an account of the whole, as he has already done of Guzerat, in his memoir in the Bombay Medical Transactions, which perhaps you know,—if not, I can send; but I do not think much of *extensive* novelty remains here. Fragments may be picked up doubtless, and I think I have a few already; but as our limits only extend to Vingorla (just the beginning of the rank vegetation of Malabar, and which Dalzell is working out) in a southern direction, we miss Canara, Coorg, Mysore, and the Malabar coast, where many, many things are new, and yet wait a botanist, despite of Wight's industry. The forests here (as far as I have seen them as yet) are not the dense and dark ones which clothe the Malabar Ghauts, where one can only walk or creep, not *ride* or *drive*, and where the heavy rains breed a rank under-jungle, and where the Teak and Blackwood, and scores more trees, grow giants in stature. The Concans here are painfully cultivated even up to the hill-tops, and the annual burning of the jungles, and the consumption of branches for wood-ashes for manure, have in many parts made the country as bare as one can imagine. I understand however that it is rather better in Mulwan, where Dalzell is, and also in some deep forests, called the "Dangs," between Surat and Kandeish. If in parts of the Concans there are still left slender spars of Teak (which by care and permission will doubtless attain a respectable size) we must thank Dr. Gibson, and his measures. If the Concan is thus bared by cultivation, what can we say of the Deccan, which is just the hills of Scinde, *plus a monsoon rain* annually? Hence a stunted carpet of vegetation; hence rills of water below the high hills; but the hills bleak, brown, and bare, now in April and May, and decidedly no *rank* vegetation anywhere, but a dry climate and hot winds, and lots of *Acacias*. But between the undulating and narrow strip of the Concans and the table-land of the Deccan are the Mawul districts, just beyond (or east of) the ridge of the Ghauts, where the dryness of the atmosphere is less, the plants are more green, the water is more abundant, and some forest yet left on the hill-sides (slowly but steadily disappearing however under the cultivator). Here we may get a few things: Mahableshwur (4500 feet), whose plants you doubtless know, is in the Mawul country, and Dr. Gibson knows of other lofty hills, near Jooneer (Hurrychunda, etc.), which may yield a few things. But I fancy that up the Nerbudda, towards Jubblepoor, in parts of Kandeish, in parts of Central India, and especially, of course, on the Malabar coast, we may meet with *many* good things, and I mean, within the next three years (D. V.), to try them; but not much in Bombay Presidency Proper.

I am liable to correction in all this, and I hope also to show you that a few scattered novelties remain, having been seen by many, but unheeded. Thus, for example, the *Rhabdia* you figured in your 'Icones' has haunted me from Bulsar in North Concan, to Rutnagherry in South

Concan, and moreover all over the Deccan, in river-beds, as one of the commonest plants. And I have what is probably a new *Physichylus*, which seems also common,—very near *P. Senegalensis*, having pinnatifid leaves, but seems to differ in its suffruticose, erect, lignose, pubescent stems, leaves often very large, etc.; and it has two marks not noticed in *P. Senegalensis*, viz. cells of ovary *twelve-seeded* (which renders the generic character necessary to be extended), and sepals *toothed;* but it is a true *Physichylus*, and its flower cannot readily be distinguished from *P. Serpyllum.* I mention this merely to show that little windfalls may be expected, but not "a new plant at every yard," as I was told I might expect.

The two gardens are in the Deccan,—one, Dapooree, near Poona; one, Hewra, near Jooneer. The first is merely the cabbage-garden of the Governor, and I hope that I may see as little of it as possible; for a garden, wherein one is liable to be wigged for neglecting the cabbages in favour of *mere* botanical novelties,—I say, such a garden is not a pleasing charge, and Dr. Gibson long ago recommended its being left in charge of a gardener only. But Hewra, in the Jooneer valley (Dr. Gibson's own Den), is a much nicer garden, situate on a peninsula of thirty-six acres, with a narrow neck, having abundant water in the river, and besides a little rill running down from the hills behind; whereas Dapooree is a nasty dry soil, bad quality, and no water. Here, at Hewra, Dr. Gibson has collected all the commoner, and many of the rarer, Indian trees and shrubs,—about two hundred *distinct trees*, and three hundred shrubs and herbs. You will laugh at this small number, but Dr. Gibson has collected them as he saw them in his perpetual travels (for he has only three months per annum at Hewra), and reared them here, in the corners of the garden and along the walks. For unfortunately the Hewra garden is limited in its allowance, and has to grow sugar-cane, *Leontodon Taraxacum*, *Hyoscyamus*, *Senna*, *Arachis*, and other things, to support itself; so the botanical part is a voluntary addition, which however I hope will now be improved on, since the garden is, I believe, to be doubled in extent*, which will give room for all the trees, etc. In the Deccan garden grow admirably things from New South Wales, Cape, Mexico, etc., and in the cold weather all the common annuals of the English gardens. The decidedly *tropical* and *moist* plants do not grow well, such as Nutmeg, Clove, Cinnamon, *Guttiferæ*, etc.; and for these I hope, in some future year, to get a small garden below the Ghauts, in the moist climate of the Concans. The Monsoon rain, which in Bombay averages seventy-six inches, and at Mahableshwur 248 inches! falls in the Deccan Proper to twenty-six inches, as at Poona, and twenty-three as at Ahmednuggur, a quantity which, even in rainless Scinde, we had last year; but this, to be sure, was a most extraordinary fall for Scinde, and is duly recorded in the Bombay Transactions already. By the way, if Dr. Hooker wants details of climates in India, the Transactions of the Bombay Geological Society and of the Bombay Medical and Physical Society should be consulted for our side, not omitting a book just published by Dr. Buist, 'Manual of Physical Research for India,' Bombay, 1852: any of these, if not procurable with you, shall with pleasure be sent by me to your address.

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* We have the pleasure to learn from Dr. Gibson, now on a visit to England, that such is actually the case. This garden has been much extended, by order of the Government.

However, this comparatively small amount of rain in the Deccan makes the climate during those months very pleasant and cool, and wanting the torrents of water in Bombay, which prevent out-of-door occupation. In short, April and May (as all over India) are the only bad months in the Deccan, and during them (while our gardeners languish) we Europeans try generally to take a run up to Mahableshwur, where a lovely climate, pretty scenery, potatoes, strawberries, geraniums, Fuchsias, and what not, delight and refresh the body and mind, wearied out by the dry heat of the Deccan or the moist steamy heat of the Concans. I want much to get a closed greenhouse to grow Orchids, *Scitamineæ*, Ferns, etc., for which the Deccan is too dry without such aid, and I think Dr. Gibson may be persuaded to send out a ready-made house, which I suppose would not cost above £30, of a fair size. I will with pleasure send you details of any nice country I come across (since you wish it), but at present I have seen nothing but the undulating bare hills of the South Concan about Rutnagherry, and the abrupt bare hills of the Deccan here, and about Poona—nothing interesting there.

Plants of Algeria, etc.

L'Association Botanique Française d'Exploration est sur le point de terminer le partage des collections recueillies en 1852, par l'un de ses voyageurs en Algérie, M. Balansa, dans le voyage annoncé dans la circulaire du 30 Janvier dernier. M. Balansa, forcé, à cause de l'état politique du pays, de modifier le premier itinéraire qui avait été indiqué dans cette circulaire, a dû renoncer à l'exploration des environs de Tlemcen ; mais il a été à même, par un séjour de plusieurs mois à Oran, de recueillir toutes les espèces intéressantes de cette riche localité. Une excursion entreprise en commune avec M. Cosson, dans la région des hauts-plateaux, depuis Saïda jusqu'au Chott-el-Chergui, lui permettra en outre de donner dans ses collections la plupart des plantes spéciales à cette région, riche en espèces Espagnoles et Orientales, et dont la végétation n'était pas encore représentée dans les herbiers. Les collections de M. Balansa se composeront de 500 espèces. Elles pourront être envoyées à tous les souscripteurs dans le commencement du mois d'Octobre*. Le prix de chaque centurie reste fixé à 20 francs, comme par le passé.

Le nombre des collections qui restent disponibles étant dès maintenant très-restreint, nous vous prions, Monsieur, de vouloir bien nous adresser votre adhésion dans le plus bref délai possible, dans le cas où vous ne seriez pas déjà compté au nombre des souscripteurs. Votre réponse devra être adressée, s'il y a lieu, à Monsieur Balansa, Rue Suger, No. 1.

Paris, 4 Septembre, 1852.

P.S.—Nous profitons de cette occasion pour informer les souscripteurs aux collections de M. Bourgeau, que l'envoi des plantes recueillies en Espagne cette année, envoi qui se composera d'environ 200 espèces, leur sera fait en même temps que celui des collections de M. Balansa, pour éviter des frais d'expédition. Nous croyons prévenir également les botanistes qu'il ne reste qu'un petit nombre d'exemplaires des

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* These collections are now distributed, and we can assert, from an inspection of our own, that the specimens are all beautifully prepared, and very many of great variety or entirely new. This "Association Botanique Française d'Exploration" is deserving of every encouragement. We have the further pleasure of being able to state, from a letter dated Paris, Oct. 1, 1852, that M. Bourgeau is appointed to explore the southern part of Portugal, during the year 1853, especially Algarves, a district hitherto little known by the botanist, and where he reckons upon collecting from 400 to 500 species of plants.

deux centuries récoltées en 1851, par M. Balansa, aux environs de Mostaganem. Les collections recueillies aux environs d'Alger, en 1850 et 1851, par M. P. Jamin, et composées de 230 espèces, sont également sur le point d'être épuisées. M. Jamin, actuellement fixé à Biskara, sur la limite du Sahara Algérien, adressera prochainement à la Société une centurie de plantes de cette région.

NOTICES OF BOOKS.

PRITZEL, G. A.: *Thesaurus Literaturæ Botanicæ omnium Gentium inde a rerum Botanicarum initiis ad nostra usque tempora, quindecim millia operum recensens.* 4to. Leipzig, 1847–1851.

On former occasions we have noticed the early fasciculi of this useful work; the whole is now completed, with the seventh number, or fasciculus. The most useful portion is perhaps the alphabetical arrangement, according to the authors' names, occupying 335 closely printed pages in double columns, and including 11,538 publications; "Opera anonyma" occupy 14 more, bringing the alphabetically arranged portion to 11,906 articles. Then follows the "Pars Systematica," including Historia botanices, Vitæ botanicorum, Effigies botanicorum, Epistolarum collectiones, Bibliothecæ botanicæ, Plantæ sacrorum bibliorum, Phytotheologi, Symbola e plantis desumta, Poemata de plantis, De plantis Veterum Critici, Plantarum mythicarum et magicarum historia, Collectanea Miscellanea et Diaria, Lexica varia botanica, Encomia botanices, Nomina plantarum, Methodus studii botanici, Termini botanici, Artes botanicæ, Collectio Herbariorum, Ectypa Plantarum, Horti botanici (public and private, in and out of Europe), Catalogi Hortulanorum, Musea varia, Itinera, Geographia plantarum, Floræ (arranged according to their respective countries), Calendaria Floræ, Plantæ fossiles, Monographiæ (arranged systematically, and very useful), Monographiæ plantarum officinalium, Cultura arborum pomiferarum, Botanica hortensis, Cultura Florium hortensium, Botanica œconomica, Cultura et usus plantarum singularum, Plantæ tinctoriæ, Plantæ utiles, Materia alimentaria, Varia potus genera, Botanica salutaria, Cultura et usus arborum singularum, Materia medica vegetabilis, Medicamenta varia, Classes medicamentorum,—and a number of other heads, generally of minor importance: indeed, we think these are multiplied to such an extent as to make it extremely difficult to know where to look for any particular subject. Very full Indexes conclude the volume of 547 pages, and every botanist will have reason to thank Dr. Pritzel for the labour and skill he has employed in the work. It might have been improved by consulting the botanical libraries in England, if the author could have spared the time.

MARSHALL, WILLIAM, ESQ.: "*The Water-weed,* Anacharis Alsinastrum, *some account of it.*" 8vo. Pamphlet. London, 1852. Pamplin.

We have here a very interesting account, by a gentleman of Ely, Cambridgeshire, of, apparently, an *imported* water-plant from North America, where said plant, according to the declaration of the most distinguished North American botanist, Dr. Asa Gray, does not spread so as to become a nuisance,—yet in England in the course of a few years extending itself in our rivers and canals to such an extent as to become a great pest. This "*foreigner,*" as it is called by the watermen in Cambridgeshire, a small insignificant-looking weed, like the smallest of our "Pond-weeds" (*Potamogeton*), in several counties of England now forms "large submerged masses of a striking appearance," so large and so dense, that the passage of boats is impeded; navigation is stopped till a clearing takes places by manual labour; in short, sluices are choked by it,—the "Railway Dock," at Ely, to such a degree that boats could not enter till several tons were removed. For further particulars, and how the extension of the plant to so many different counties is accomplished, we must refer our readers to the pages of the little *brochure* itself. At the commencement (and it is again more than once repeated) a promise is given to discuss "who the stranger is—whence he came—how he got here—and by what means he is to be got rid of." All but the last pledge is satisfactorily redeemed: the reply to this we were rather disappointed to find was by an emphatic "NOT AT ALL." This is poor comfort to those interested in our *internal navigation,* to our "*watermen, sluice-keepers, rowers, swimmers,* and *fishermen,*" and, last and not least, to the "*drainage*" of our fens. An experienced officer has asserted that the waters of Denver sluice, below Cambridge, have been this year *a foot higher* than in ordinary seasons, and he refers *at least* half this difference to the obstructions occasioned by the presence of "*Anacharis.*"

AMERICAS EGEVEGETATION, etc. (*The Oak-vegetation of America;* abridged from two popular lectures delivered before the Association of Natural History of Copenhagen*, and separately reprinted.) By Professor F. LIEBMANN. Copenhagen, 1851. Translated from the Danish, by Dr. WALLICH, F.R.S., V.P. Linn. Soc.

If the reader should happen to be acquainted only with our own indigenous Oak, though he would recognize in it a vegetable form, which from olden times has continued the symbol of strength and the prize of civic virtue, yet he would not derive from it any conception of the rich variety of appearances, which the tribe of Oaks developes in its distribution over the surface of the globe. The species perform so great a *rôle* in the vegetable physiognomy, exhibiting, wherever they appear, the chief constituents of forests, that it may perhaps be considered of interest to give here some account of the nature of the Oaks in America. We will premise some brief remarks concerning their existence in other parts of the world.

Up to the present time, about 230 species of oaks are known, belonging principally to the northern hemisphere. To the south of the line they occur only on the Sunda Islands, among which, at Sumatra, crossed by the equator, and at Java, in lat. 8° south, there exists a numerous and highly remarkable groupe of Oaks. It is a striking fact, that they are entirely wanting in the temperate zone of the southern hemisphere, f. i., in New Zealand (35–45° S.), in Van Diemen's Land (42° S.), in southern Chili, Patagonia, and Terra del Fuego (40–54° S.); the more so, because forests are found there of Beeches, which in Europe ordinarily accompany the Oak, and which count the majority of species in those very parts of the southern hemisphere.

With respect to the distribution of the species, only 2 (3) Oaks are found in Europe, north of the Alps. To the south of these, in the southern Europe, bordering in the Mediterranean, there are 18 species. That portion of western Asia which approaches nearest to the Mediterranean has 14 species. The eastern temperate zone of Asia has 25 species, out of which 20 belong to Japan; India has 21, and the Islands of Sunda 37 species. The northern coast-lands of Africa possess seven sorts, the Canary Islands (Madeira) one sort; but none is met with in middle and south Africa, or the islands belonging thereto. New Holland and Australia have no oaks, nor South America, south of the line. Thus Europe counts 20, Asia 97, and Africa 8 species. But since several of the South European Oaks occur again in Asia Minor and the adjoining countries, and in northern Africa, the sum total of Oaks in Europe, Asia, and Africa must be reckoned at 110 species.

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* It must be borne in mind that this deservedly flourishing Society, now seventeen years old, is by no means of a purely scientific nature. Communications, written or oral, suited to a mixed audience, are made on every alternate Sunday during the winter months.—TRANSL.

From America 101 species of Oaks have already been described; which number, however, will probably suffer a not inconsiderable reduction, when the species are critically revised. I venture, nevertheless, to assert, that the American Oaks surpass in number the aggregate amount from all other parts of the world, with reference only to the forms preserved in the herbaria of Europe—nay, to those only which are at present in my hands*.

It is deserving of notice, that while other parts of the world have several Oak-species in common, the case is not so as regards America, where not one single species exists from thence. The cause of this is to be traced, partly in the circumstance, that neither in America nor Asia do the Oaks extend so far north, as to be able to migrate from one quarter into another, where the transition is shortest; and partly in the extraordinarily brief vitality of the acorn, by which the ocean is prevented from transporting them in a living condition, from one part of the globe to the other.

As in Europe, north of the Alps, the Oaks are *deciduous*, and continue leafless during all the winter, while in the Mediterranean they are *evergreen;* so also do we find, that, in North America, to the north of the equator, and as far as a considerable difference exists between the temperature of summer and winter, the Oaks are *deciduous;* while those in its tropical and subtropical zone, are *evergreen.*

It has hitherto been a prevailing notion, that the oak-form is peculiarly characteristic of the temperate zone. But whether we look to the number of species, the beauty of the forms, or the size of particular organs (leaves, fruits, cups), we shall find their maximum in the tropical zone, that is in the Sunda Islands of the Old World, and tropical Mexico in the New. It must be admitted however that, in the hot zone, it is especially at an elevation above the sea enjoying a temperate climate, that the Oak predominates; though with this express reservation, that, ordinarily, the conditions of vegetation are far more favourable in the temperate mountain region within the tropics, than in the temperate zone, which has commonly been placed on a parallel with the former; for, neither in the seasons, nor between night and day, is the difference so great in the temperate region of the tropical zone, as in the temperate zone; and the quantity of rain, that important condition of vegetation, is far more considerable within, than without the tropics, and increases much at mountain elevations in tropical countries.

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* Among the contributions to the study of American Oaks, which I have received from abroad, I must above all advert to the rich collection so liberally confided to me by Sir William J. Hooker, containing as it does, besides most of the published American Oaks, a number of undescribed species also. [This note is added by desire of the author, in a letter to the translator.]

Moreover, it must not to be supposed, that it is in the temperate zone, where the Oak developes itself most favourably, with regard to the appliances of its wood for useful purposes; or where its trunk attains the greatest size. There are as mighty Oaks in the torrid zone with perhaps higher trunks, though scarcely of greater diameter; and as regards the hardness of its wood, many of the Mexican species greatly exceed those of the temperate zone in that respect, so that the wood is hardly to be wrought by means of ordinary tools; nay, on account of its iron-hardness and toughness it is converted into tools, which in other parts are made of metal.

It is known that there are Oaks in the south of Europe, Asia Minor, and in northern Africa with edible fruits (*Quercus esculenta, Ilex, Ballota*); the acorns being sold like our filberts and walnuts. Rich as America is in Oaks, not a single esculent species was known until within the last few years. Captain Fremont became acquainted with such a species among the indigenous Indian tribes of the western slope of the Upper-Californian Cordilleras, who collect the acorns for winter store, and to a great extent are supported by them. The species is *Quercus Hindsii*, described already by Hooker and Arnott in the collections brought home from Captain Beechey's Expedition; though the use of the fruit as an article of food, was unknown before the journey of Fremont.

A small group of deciduous Oaks, not ripening their fruit until the second year, is peculiar to North America. To it belong *Q. Phellos, Banisteri, rubra, coccinea, tinctoria, palustris,* and others. Likewise some species, whose leaves become blood-red towards the fall, thereby imparting to the forests in autumn, a magnificent appearance; among these are *Q. coccinea* and *rubra*. I now go on to sketch out the Oak-vegetation of America, proceeding from north to south.

The belt within which the Oak makes its appearance in America, may be placed at between 50° and 2° N.; consequently it does not approach, much less pass the equator, but disappears with three species in the Cordilleras of New Granada. The northern limit is at 50° N. on the western side of Nootka Sound (according to Luis Neé). In the interior of British North America, Oaks occur, as far as the southern shore of Lake Winnipeg, where the mean summer heat is + 19° C., and the mean winter cold —10° C. On the eastern side they hardly ascend to the north of Quebec in 47° north. It appears, hence, that they follow nearly that line (isotherm) whose mean heat is + 5° C. It is interesting to notice that, while the Oak in Europe, on the western side of Norway, extends up to Molde and Christianssund (65° N.), its north boundary descends considerably southwards in the interior of the continent, and closely following the isotherm quoted, + 5° C., which touches Christiania, Stockholm (60°), and Moscow, continues through Siberia and Mongolia, and ends on the coast of North China, where it sinks down to 50° N.

In Canada the most northern kind is *Q. alba*, a large tree, sixty feet high, producing very good timber. *Q. tinctoria* exceeds this in size, attaining sixty to eighty feet in height, and six to ten feet in diameter; it spreads considerably over North America, as far down as Georgia, furnishing the best timber for building purposes in the Northern States. *Q. rubra* extends to the Alleghanies, and reaches a height of as far as ninety or a hundred feet. *Q. obtusiloba* is spread along the east side of North America quite down to Florida; it is a tree of the size of *Q. alba*. There is finally a shrubby sort (*Q. Banisteri*) which reaches down to Virginia.

The area of the United States is of such immense magnitude, and the climate is so much diversified, that it is expedient to separate the Oak-forms of the Eastern and Western States, of the Northern States with temperate climate, and the Southern with subtropical climate. We may observe, generally, that the species of Oaks in the United States increase steadily towards the south, and, stretching into the interior from the eastern side, cross the Apalachians and Alleghanies, but disappear altogether in the vast prairies, which extend from the westward of those mountains to the Rocky Mountains. In this last great mountain-chain, the Oak seems altogether to be wanting, owing principally, perhaps, to the circumstance that, in ascending from the Prairies, its elevation above the ocean at the very base is such, that the Oak can no longer exist. The dry continental climate of the Rocky Mountains co-operates probably with equal force in producing this deficiency. The Oaks on the western side are different from those on the eastern; the only exception being *Q. rubra.*

The most important forest Oaks in those Eastern States, which have a temperate climate, are *Q. coccinea*, a tree eighty feet in height, reaching as far as Georgia; *Q. Prinus*, extending from Pennsylvania to Florida; *Q. olivæformis*, which occurs on the shores of the river Hudson; *Q. triloba*, *nigra*, and *falcata.*

Many of the North American forests are known to be very swampy; and such are chiefly formed of three species, namely, *Q. Phellos*, attaining a height of sixty feet, and extending to Florida; *Q. Prinus*, var. *palustris*, and *Q. palustris*, which spreads especially over Pennsylvania.

The Southern, or so-called Slave States, possessing a warm, temperate or subtropical climate, produce, besides the above-mentioned sorts found in the Northern States, a number of peculiar Oaks, amongst which we will enumerate in this place *Q. macrocarpa*, in the States west of the Alleghanies; *Q. cinerea*, a low tree of Virginia and Georgia; and *Q. virens*, the northernmost of the United States evergreen Oaks, attaining a height of forty to fifty feet, spreading over Virginia, Florida, and the Valley of the Mississippi, and being of great value, as the best naval timber-tree of the Southern States. In swampy forests from Carolina to Florida, is found *Q. lyrata;* and from Maryland to Florida *Q. aquatica*, having a height of sixty feet.

As yet the botany of the western coast of the United States and California has been but imperfectly explored. We are indebted to Neé, Douglas, Coulter, Hartweg, and Fremont for what is known of the Oaks of those parts. *Q. rubra* has already been named as spreading over the western side. As peculiar forms must be mentioned *Q. agrifolia*, the leaves of which resemble the Holly; *Q. Garryana*, *Q. Douglasii*, *Q. densiflora*, a magnificent tree, which is remarkably like the Chestnut, and in appearance very foreign from American Oaks, and in this respect corresponding more with the Chinese and Himalayan sorts; and finally the before-mentioned *Q. Hindsii* with eatable fruit. Most of the North-west American and the Californian species descend from the mountains into the plains; the evergreen species extend on the west coast further into the north, than on the east coast, which is caused by the milder climate derived from the warm currents of the South Sea.

Before quitting the temperate North America, we may point out the following common characters of its Oaks: deep-lobed leaves predominate, giving the trees an habitual likeness with our North European sorts; most species have small oval fruits, and these are generally sessile, or very short-peduncled.

New Mexico and Texas, which have been visited botanically by Berlandier, Lindheimer, Fendler, Wright, and Drummond, have a subtropical climate, and, as regards their Oaks, correspond much with the southernmost United States. Thus we meet again here with *Q. virens*, which makes its appearance under an incredible variety of forms; *Q. cinerea*, *falcata*, *lyrata*, *aquatica*, *nigra*, *Floridana*, and *Q. Gambellii* from the mountains in the vicinity of Santa Fé. Most species extend as far as the equator.

Previous to entering upon our account of the Oak-region of Mexico, we have to observe that the entire West Indian Archipelago is destitute of Oaks, which is somewhat surprising, since several of the islands have a considerable size and rise into respectable mountains, where even the fir-tribe makes its appearance. Properties of the soil unfavourable for the production of the Oak, are probably the cause of this, though I know too little of West Indian geognosy, to form any correct opinion on this subject.

Wherever I have met with Oaks on the continent of America, I have found them growing in a very heavy clay, deep red from iron, and wholly wanting all chalk admixture. In those parts of Cuba which I visited, I nowhere observed that sort of soil; but the clay was mixed with chalk. I am ignorant of the condition, in this respect, of the more elevated mountains of Cuba, especially in the eastern part of Sierra Maestra, where it might be expected to find Oaks in high situations, but where none are as yet known to exist.

We now come to the tropical zone of continental America, where the genus attains its maximum. The reason why Mexico is so extremely interesting, in regard to its vegetable geography, is its extreme inequality of surface, producing often the greatest differences of climate, at very short distances; all the changes, from the most scorching tropical lowland, to the region of perpetual snow, may be experienced within one single day's journey. To note down the influence, which these different conditions exercise on such a large genus as the Oak, would be very instructive to the botanist.

It is inexpedient to treat of the production of Oaks of Mexico as a whole; the best plan will be to divide the species into groups, according to the elevation at which they occur. When it is considered, that Oaks are found in Mexico, from the level of the ocean, to a height of 12,000 feet, and to an amount at least of eighty known species, notwithstanding that only one-half of its area has been investigated, it may be easily understood, that such a division becomes necessary; although, on the other hand, the theme is too manifold, to admit of being exhausted in this place. Nor is this, perhaps, required, since our sole object is to exhibit, in large features, the geographical relations of a tribe of plants in one part of the world, by explaining the changes which its species undergo from the north to the south, from the lowland to high localities. I deem it most suitable, therefore, to consider the Mexican Oaks as they exhibit themselves to the traveller, who proceeds right across from the eastern coast westward, until he descends on the opposite side, to the shores of the South Sea; which route will carry him across the loftiest mountains of the country.

(*To be continued.*)

FLORULA HONGKONGENSIS: *an Enumeration of the Plants collected in the Island of Hong-Kong, by* Major J. G. Champion, 95*th Reg.*, *the determinations revised and the new species described by* GEORGE BENTHAM, ESQ.

(*Continued from p.* 305.)

AQUIFOLIACEÆ*.

1. Ilex *cinerea*, Champ., sp. n.; glabra, ramulis novellis angulatis, foliis brevissime petiolatis oblongis paucidentatis basi obtusis sub-

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* Omitted among *Polypetalæ*, where it might have been better placed next to *Celastraceæ*, although usually gamopetalous.

cordatisve coriaceis, floribus subsessilibus glomeratis tetrameris, petalis subdistinctis. — *Frutex,* ramulis crassiusculis, cortice cinerea. *Folia* majora 4 poll. longa, $1\frac{1}{2}$–2 poll. lata, obtusa v. in acumen breve obtusum producta, margine breviter et remotiuscule calloso-dentata, subtus pallentia, supra non nitentia, petiolo crasso 1–2 lin. longo, omnia basi quam in affinibus multo latiora; minora sæpe obovata. *Flores* per 8–15 in glomerulos globosos collecti, pedunculo communi subnullo, pedicellis raro lineam longis. *Bracteæ* squamæformes, parvæ. *Flores* quam in *I. Aquifolio* paulo minores. *Calycis* dentes lati, brevissimi, minute ciliolati. *Stamina* petala æquantia, filamentis crassiusculis. *Ovarium* subglobosum, disco stigmatoso superatum, 4-loculare. *Bacca* 3 lin. diametro, haud apiculata.

In a ravine of Mount Victoria. The very short petiole and the blunt base of the leaves readily distinguish this species from all others known to me.

506 2. Ilex *graciliflora*, Champ., sp. n.; glabra, ramulis teretibus, foliis elliptico- v. obovali-oblongis obtusis paucidentatis basi in petiolum longiusculum angustatis coriaceis nitidis, umbellis subsessilibus, pedicellis gracilibus, floribus tetrameris, corollis profunde fissis, bacca mutica.—*Arbor*, ramulis in vivo purpurascentibus, siccitate fuscis, apice vix sub folia angulatis mox teretibus. *Folia* majora 3–$3\frac{1}{2}$ poll. longa, 12–15 lin. lata, acumine obtuso vix distincto, dentibus paucis brevibus subcallosis, petiolo 6–7 lin. longo; minora 1–2-pollicaria, obtusiora, integriora; inferiora fere obovata; omnia consistentia laurina, supra nitida, subtus pallida, costa subtus elevata, venis divergentibus ramosis parum prominentibus. *Florum* fasciculi axillares, pedunculo communi subnullo v. hinc inde semilineam longo. *Pedicelli* marium 15–20, graciles, 3–4 lin. longi, hermaphroditorum paulo breviores et sæpius pauciores. *Calycis* dentes breves, orbiculati, ciliolati. *Petala* basi breviter connata, $1\frac{1}{2}$ lin. longa, orbiculata, per anthesin reflexa, exteriora leviter ciliata. *Filamenta* petalis subæquilonga, antheris parvis. *Ovarium* depresso-globosum, stigmate disciformi. *Bacca* purpurea, globosa, magnitudine pisi.

Common in the Happy Valley woods.

3. Ilex *memecylifolia*, Champ., sp. n.; glabra, ramulis subteretibus, fo-
507 liis breviter petiolatis ovatis obovatis v. rarius oblongis integerrimis coriaceis nitidulis subaveniis, umbellis sessilibus, pedicellis rigidulis flore vix longioribus, floribus tetrameris, corollis profunde fissis, bacca

umbonata.—*Frutex* ramosissimus. *Folia* sæpius 1–1½ poll. longa, 7–11 lin. lata, obtusa v. in acumen breve producta, basi acuta, margine recurvo sæpe purpurascente et constanter integerrimo, petiolo 1–2 lin. longo, costa subtus prominente venis inconspicuis, supra viridia, subtus pallida, in sicco sæpe flavicantia. *Fasciculi* axillares, 3–6-flori, pedunculo communi subnullo, pedicellis 1–2 lin. longis. *Calycis* dentes breves, lati, non ciliati. *Petala* alba, lineam longa, ad quartam partem connata. *Filamenta* antheris paulo longiora. *Bacca* coccinea, pisi magnitudine, stylo brevi crasso apiculata.

A very common shrub on the hills. Besides the form above described, the specimens indicate two distinct varieties: β. *nummularia*, with small, broadly obovate, and usually retuse leaves, and γ. *oblongifolia*, with narrow acuminate leaves, near three inches long, and rather longer pedicels, but the leaves are perfectly entire, and of the same consistence and colour, and the berries scarlet and apiculate as in the more common form.

4. Ilex *viridis*, Champ., sp. n.; glabra, ramulis angulato-striatis, foliis
568 petiolatis ovatis denticulatis basi acutis tenuiter coriaceis nitidis, pedicellis fœmineis solitariis petiolo longioribus, floribus tetrameris, corollis ad medium divisis, bacca obtusa.—*Frutex* 2–3-pedalis, ramosissimus, ramulis foliisque læte virentibus. *Folia* 1–1½ poll. longa, 6–9 lin. lata, obtusa v. breviter acuminata, rarius acutiuscula, crenaturis parvis subcallosis v. rarius apiculatis. *Florum fœmineorum* pedicelli 3–4 lin. longi, superne incrassati. *Calycis* lobi brevissimi, orbiculati. *Corolla* subrotata, 3 lin. diametro, lobis latis orbiculatis. *Filamenta* brevissima, antheris ovatis. *Ovarium* ovoideo-oblongum, disco stigmatoso crassissimo truncato. *Bacca* purpurea, globosa, 4–5 lin. diametro, haud apiculata, tetrapyrena.

On the hills, flowering in April. According to Major Champion, the male individuals (which I have not seen) have their flowers several together in axillary corymbs.

5. Ilex *asprella*, Champ.—*Prinos asprellus*, Hook. et Arn. Bot. Beech. p. 176. t. 36.

Victoria Peak and Little Hong-Kong. This species is allied to the last, but is readily distinguished by the thinner acuminate leaves, slender pedicels, triangular lobes of the calyx, etc. The flowers in my specimen are usually tetramerous, but they are occasionally pentamerous and even hexamerous.

The above two species, although more decidedly diœcious than many others, cannot be generically distinguished from *Ilex*. In almost all the Eastern species at least there appears to be a tendency to sexual separation, or at any rate to a predominance of each of the sexes in different individuals. The male individuals have usually the flowers more numerous in each fascicle, the pedicels more slender, the filaments longer, and the ovary often quite rudimentary; the females (which are always to a certain degree apparently hermaphrodite) have the flowers few in each axil or solitary, the pedicels usually thickened under the flower, the stamens always present, but with short filaments and perhaps sterile anthers, and a perfect ovary. The number of parts of the flower, etc., although constantly quaternary in some species, varies in others in fours, fives, or sixes, and is occasionally even reduced to threes.

6. Ilex *pubescens*, Hook. et Arn. Bot. Beech. p. 176. t. 35.

Subarboreous, in the Happy Valley woods. Flowers in April, numerous, light lilac, sometimes white. There is also a smaller variety, with much smaller leaves, minutely denticulate, the teeth mucronate; it forms a shrub on bare hills, with a scarlet berry.

OLEACEÆ.

650 1. Fraxinus (Ornus) *retusa*, Champ., sp. n. (vel var. *F. floribundæ?*); foliolis subquinis longe petiolatis ovatis v. ovali-lanceolatis acuminatis basi rotundatis dentibus parvis inæqualibus, paniculis laxis multifloris, petalis oblongo-linearibus obtusiusculis, samaris oblongo-linearibus retusis glabris.—*Foliola* 2–5 poll. longa, 1–1½ poll. lata, petiolulo 4–6-lineari. *Samaræ* 10–12 lin. longæ.

Woods in the Happy Valley, near the Waterfall, flowering early in spring. It is closely allied to *F. floribunda*, Wall., from Nepal, to *F. urophylla*, Wall., from Silhet, and to *F. longicuspis*, Sieb. et Zucc., from Japan, and it is not improbable that the whole may be mere varieties of one species.

2. Olea *marginata*, Champ., sp. n.; foliis elliptico-oblongis obtusis v. 760 vix acuminatis basi angustatis crasso-coriaceis glaberrimis nitidis calloso-marginatis, paniculis 1–3 axillaribus petiolo paulo longioribus, corollæ lobis latis tubo æquilongis.—*Ramuli* crassi, cortice cinerascente. *Folia* ad apices conferta, opposita, 2½–5 poll. longa, 1–1½ poll. lata, apice nunc rotundata nunc breviter et obtuse acuminata, utrinque viridia, costa subtus elevata, venis obscuris, petiolo 8–12

lin. longo, rigido, supra plano, basi incrassato. *Paniculæ* thyrsoideæ v. subcorymbosæ, raro pollicares, densifloræ, tenuissime puberulæ, ramulis oppositis. *Bracteæ* lineari-carinatæ, 1–2 lin. longæ. *Flores* abortu subdioici; *Masculi*:—*Calyx* semi-4-fidus, lobis triangularibus obtusis subciliolatis tubo corollæ paulo brevioribus. *Corollæ* tubus latus, 1 lin. longus, lobi lati obtusi 1 lin. longi. *Filamenta* usque ad apicem tubi adnata. *Antheræ* corollam æquantes. *Ovarium* depresso-globosum, obsolete biloculare, ovulis inconspicuis, stylo nullo. *Flores fertiles* non vidi. *Inflorescentia* speciminis fructiferi eadem ac marium nisi minus ramosa. *Drupæ* oblongæ, fere 6 lin. longæ, pericarpio tenui, putamine lignoso, abortu monospermo.

Near the top of the Waterfall in the Happy Valley. With flowers of the size of those of *O. fragrans*, but differently shaped, this species has the inflorescence of some species of De Candolle's first division of *Euclea*, and leaves different from any *Olea* known to me.

3. Ligustrum *Sinense* (Lour. Fl. Cochinch. p. 19?); foliis ovatis v. ovato-lanceolatis subtus ramisque pubescentibus, paniculis axillaribus terminalibusque densis multifloris, calyce obsolete dentato, corollæ tubo brevissimo incluso, bacca globosa.—Affine *L. Nepalensi*, sed folia multo minora, calyx subinteger et baccæ globosæ nec ellipticæ.

Cultivated, but found also frequently by roadsides, though perhaps not truly indigenous. No. 155 of Fortune's plants appears to be the same, and I should also, from the characters given, refer to the same species the *Olea Walpersiana* and the *Olea consanguinea* of Hance (Walp. Ann. Bot. vol. iii. p. 17, 18). No. A 64 of Fortune's Amoy collection is nearly allied, but smoother, and is probably the *Ligustrum Stauntoni*, DC. No. A 6 of the same collection agrees very well with Japanese specimens of *Ligustrum Ibota*, Sieb. et Zucc.

JASMINEÆ.

1. Jasminum *paniculatum*, Roxb.—DC. Prodr. vol. viii. p. 310.

Common on the Victoria Peak and other ravines.

2. Jasminum *officinale*, Linn.?

A mere fragment in Col. Eyre's collection.

APOCYNEÆ.

Of the genus *Melodinus* there are three forms, all very similar to each other as well as to the *M. monogynus* of Roxburgh in general appearance. They are all found growing together and flowering about the same time, in April and May, and might readily be considered as mere varieties of one species, were it not for considerable differences in the form of the lobes of the corolla, and in the *corona* or scales which crown its mouth, which have even induced Mr. Hance to propose one of them as a distinct genus. All three, as well as *M. monogynus*, are tall creepers, with ovate-oblong or oblong-lanceolate, acuminate, smooth and shining leaves, and terminal corymbs of numerous more or less sweet-scented white flowers, with the throat yellow. The corona consists of five scales, which are either free or more or less united into a five-lobed cup, each scale being entire or more or less bifid. Major Champion has also observed a difference in the shape of the fruit, as to one species at least, but this point requires further investigation. The following are the Hong-Kong species*.

1. Melodinus *fusiformis*, Champ., sp. n.; cymis terminalibus, corollæ 2112 lobis oblongis falcatis edentulis, coronæ squamis 5 subdistinctis brevibus latis retusis subbifidisve villosis, bacca fusiformi.—*Folia* quam in *M. monogyno* breviora, summa interdum subtus leviter puberula. *Cymæ* paucifloræ, puberulæ. *Lobi calycini* obtusiusculi. *Corolla* multo major quam in *M. monogyno*, leviter odorata. *Tubus* intus supra staminum insertionem pilosiusculus. *Coronæ* squamæ nunc fere distinctæ, nunc breviter in annulum connatæ. *Bacca* (ex Champ.) magnitudine *Mali* majoris, fusiformis v. interdum subpyriformis.

2. Melodinus *lætus*, Champ., sp. n.; cymis terminalibus, corollæ lobis 145 obovato-falcatis hinc obtuse 1–2-dentatis, coronæ squamis longiuscule exsertis semi-bifidis basi leviter connatis (bacca globosa?).—*Folia* omnino *M. monogyni*. *Flores* majores, in cymas amplas laxe dispositi. *Corona* tubum corollæ lineis 1½ superans, intus villosula, squamis lobisve erectis angustis bifidis.

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* The following diagnosis, taken from Silhet specimens, will distinguish the true *M. monogynus*, Roxb.: cymis terminalibus, corollæ lobis oblongis falcatis edentulis, coronæ squamis 5 distinctis brevibus lanceolatis integris longe pilosis, bacca globosa. A. De Candolle, it is true, says there are two scales opposite each lobe of the corolla, making ten in all, but this is evidently a mistake, for in all the Silhet specimens I have seen there are but five as described by Roxburgh and figured by Wight. There are indeed occasionally in all these *Melodini* one or two small smooth scales at the base of the lobes of the corolla *above* the corona, but they appear to be quite independent and very irregular in their presence, number, or size, and might suggest the propriety of re-uniting the genus *Bicorona*, A. DC., with *Melodinus*.

I have a specimen of the same form, gathered by Mr. Edgeworth in a garden at Dahra, in North India, and communicated to me under the name of *M. monogynus.*

3. Melodinus *suaveolens*, Champ.; cymis terminalibus, corollæ lobis suborbiculato-falcatis (fere dolabriformibus) hinc bidentatis, corona campanulata semi-5-fida lobis integris, bacca globosa.—*Lycimna suaveolens*, Hance in Walp. Ann. Bot. vol. iii. p. 31.—*Folia* quam in *M. monogyno* breviora et latiora. *Flores* ejusdem magnitudine, sed forma loborum valde diversa. *Corona* tubum linea una superans, squamis constanter ad medium connatis.

All the above *Melodini* require further examination of a considerable number of individuals from different localities, to ascertain the specific value of the distinctions observed.

Mr. Hance is probably correct in his suggestion, that *Oncinus* of Loureiro, hitherto considered as a doubtful *Myrsinea*, must be allied to, if not a species of, *Melodinus.*

4. Leuconotis, sp. n.?

Of this curious-looking plant I have only small side-branches, gathered by Colonel Eyre, and all in an abnormal proliferous state. I refer them to *Leuconotis* on account of the tetramerous flowers, calycine glands, hypocrateriform corolla, without scales in the throat, and bilocular ovarium; but I am unable to characterize them as a species, for I have no stem-leaves, and the corollas are green and herbaceous, and therefore probably in an abnormal state, although bearing stamina, apparently perfect. These specimens are two or three inches long and, from their ramification, are probably proliferous inflorescences. In the lower part they bear a few flowers with a short tube to the corolla, and obovate green lobes about three lines long, and four stamens inserted in the mouth of the tube, an exceedingly short annular disc round the ovary, the style shorter than the corolla, and bifid at the apex, several minute ovules in each cell of the ovary. The leafy branches all proceed from the centre of a flower, of which the calyx is unaltered, the lobes of the corolla form a verticil of four obovate equal leaves round the base of the branch, there are no stamens, and the upper part of the branch is crowded with leaves. These are opposite, obovate or oblong, obtuse, membranaceous, 9 to 15 lines long, and sessile, but very much narrowed at the base. Immediately above each pair, and alternating with them, are a pair of reduced leaves or scales, very short and

broad at the base, and terminating in a long point like the stipules of a *Faramea*, or of some other *Rubiaceæ*. It would be interesting to procure this plant in its natural state, to compare it with this singular deformity.

4985 5. Alyxia *Sinensis*, Champ., sp. n.; foliis oppositis ternisve parvis ovalibus obovatisve obtusis retusisque coriaceis margine crasso recurvo, paniculis folio multo brevioribus subsessilibus dense multifloris, corollæ parvæ tubo calyce vix duplo longiore.—*Habitus* et folia fere *A. buxifoliæ*. *Flores* minores et numerosiores quam in omnibus speciebus mihi notis. *Rami* elongati, tortuosi, diffusi v. subscandentes. *Folia* breviter petiolata, raro pollice longiore, nitida, præter costam mediam avenia, in vivo (ex Champ.) subdiaphana, succo lacteo. *Paniculæ* ovoideæ, vix semipollicares, ramulis oppositis cymosis. *Bracteæ* parvæ, latæ, squamæformes. *Flores* 2 lin. longi. *Calycis* lobi crassiusculi, obtusi, glabri v. vix minute ciliati, eglandulosi. *Corolla* alba, tubo medio inflato apice constricto intus subglabro, lobis parvis ovatis. *Ovaria* sessilia, basi pilosa. *Baccæ* longiuscule stipitatæ, monospermæ v. in articulos duos monospermos divisæ, ellipsoideæ. *Endocarpium* albidum, reticulato-venosum. *Seminis* albumen osseum, ruminatum; embryo curvatus, radicula longa.

Exceedingly common on rocky hills and in woods, having a straggling or climbing habit.

6. Cerbera *Odollam*, Gærtn.—A. DC. Prod. vol. viii. p. 353.

Rather scarce in Hong-Kong, growing chiefly towards the sea-shore.

7. Vinca *rosea*, Linn.—A. DC. Prod. vol. viii. p. 382.

Apparently wild, but probably not really indigenous to Hong-Kong.

8. Strophanthus *divergens*, Grah.—A. DC. Prod. vol. viii. p. 417.

Abundant in Hong-Kong, in spots near the level of the sea, flowering in March and April.

9. Rhynchospermum *jasminoides*, Lindl. in Journ. Hort. Soc. vol. i. p. 74. et in Paxt. Fl. Gard. vol. ii. p. 26. f. 147.—var. minor, glaberrima.

Abundant on the top of Mount Gough. The anthers are inserted about the middle of the tube of the corolla. The style is expanded into a peltate disc immediately under the oblong stigmatic apex. The plant generally agrees with Lindley's figure and description, except that it is smaller, and perfectly smooth, and the peduncles are shorter. Fortune's specimens, A 53, on the other hand, are larger and more hairy, and have the peduncles rather longer than is represented by Lindley. *Malouetia Asiatica*, Sieb. et Zucc., from Japan, is a closely

allied though distinct species, and *Holarrhena affinis*, Hook. et Arn., (with which I am unacquainted) is probably also a congener, but as the seeds of none of these plants are known, it remains as yet very uncertain whether they really belong to *Rhynchospermum*.

10. Aganosma? *lævis*, Champ., sp. n.; glabra, foliis oblongis lanceolatisve utrinque angustatis, corymbis terminalibus, calyce eglanduloso, tubo corollæ multo breviore, ovariis brevissimis nectarium superantibus.—*Caulis* scandens. *Folia* 2–3-pollicaria, crassiuscula, paucivenia. *Corymbi* pedunculati, laxiusculi, multiflori. *Bracteæ* parvæ, acutæ. *Corollæ* tubus 2 lin. longus, intus pubescens, lobis angustis obliquis supra pubescentibus. *Stamina* prope basin tubi inserta, filamentis brevissimis. *Nectarium* truncatum, minute 5-dentatum, *Ovaria* 2, distincta, stylo brevissimo, stigmate? subsessili crasso oblongo apice minute acuminato et bilobo.

4951

In a ravine. Flowers white. It was gathered also by Mr. Hinds, but in very young bud only, and I formerly thought it might be the *Holarrhena affinis* of Hooker and Arnott; but Major Champion's specimens are in good flower and do not agree with their description. I refer it to *Aganosma*, of which it has the inflorescence and flowers, but until the fruit is known it will be impossible to determine its genus with certainty.

11. Ecdysanthera *rosea*, Hook. et Arn. Bot. Beech. p. 198. t. 42. Ravines at West Point, in the Happy Valley. Flowering about May.

12. Pottsia *Cantoniensis*, Hook. et Arn. Bot. Beech. p. 199. t. 43. Hong Kong.

(*To be continued.*)

Notes on the Sandwich Islands; by BERTHOLD SEEMANN.

Of the twelve islands which compose the Sandwich, or as it is now generally termed, the Hawaiian Group, Oahu is one of secondary magnitude, covering a superficial area of 530 square miles. It owes its origin to volcanic action and the busy operation of corals, and is traversed from north-west to south-east by a ridge of steep mountains, the summits of which are nearly always enveloped in clouds or deluged with rain. Numerous streams descend from these heights, sometimes as little springs, more frequently forming cascades, which, after irrigating the lower lands, and diffusing freshness and verdure, discharge their waters into the Pacific Ocean.

The valley of Nuuanu, in the vicinity of Honolulu, which was formerly a mere wilderness, is now intersected by substantial roads, and converted into plantations and gardens, between which the still primitive huts of the natives, and the country houses of the foreign inhabitants of Honolulu, shaded by Koa, Hau, and Kukui-trees, display themselves; while at a distance the mountain-chain arises, presenting, from the constant moving of the clouds overhanging it, the luxuriance of its vegetation, and its deep nooks and grooves, a variety of tints and a change of light and shade truly enchanting.

In advancing towards the north of the island the road gradually ascends until it reaches a broad chasm, where the mountain seems to have been torn asunder. A strong breeze rushes into your face, you stand on the edge of a yawning precipice—the celebrated *Pali.* Your heart shudders at the thought that here the victorious Kamehameha drove over his vanquished enemies, and that here the unfortunate wretches, instead of finding refuge in the fastnesses of the mountains, were doomed to perish. Your cheeks flush, your pulse beats quicker as imagination paints with vivid colours that historical scene, and you fancy you see the fugitives one after the other pushed over the edge, their bodies falling, touching the bottom, and dashed to atoms.

Having recovered from the surprise, a view opens which quickly dispels the gloomy thoughts of by-gone days, and the fear which the unexpected appearance of the precipice and the violence of the wind were calculated to produce. Beneath stretches the smiling district of Koolau, a grassy, undulating country, dotted with groves of Screw-pines and Breadfruit-trees, the true physiognomy of a Polynesian landscape. Here and there are rivulets winding their courses through verdant plains, farms surrounded by plantations, and, at a distance, on a fine-looking bay, arises the village of Kaneohe, with its church, its court-house, and its extensive fish-ponds, the whole beautifully contrasting with the broad ocean, which, like a silvery belt, encircles all, and bounds the view on the distant horizon.

Oahu, although situated within the limits of the tropics, and deprived of the cooling influence of snow-capped mountains, has by no means a hot climate. During nine months of the year, from the be ginning of March to the end of November, the sun's rays are moderated by the trade-winds, which sweep with more or less force over the island, and occasion a considerable reduction of temperature. In the rainy season, the three months that the trade-wind does not blow, the sun has travelled too far to the south to cause an oppressive degree of heat; the thermometer never rising above 80° Fahr., nor falling below 50°. In summer the air is pure and refreshing, the sky of an azure blue, and the sun brilliant. No wonder that in such a climate little sickness prevails, that epidemics are almost unknown, and that contagious diseases, except those of a cutaneous nature, have not yet extended their influence to these shores.

The flora is neither strictly tropical, nor does it exhibit the features common in the temperate zone, rather a mixture of both. This remark, however, only applies to the aspect; in analysing the vegetation more closely we find that the greater number of its components are derived from the eastern parts of Asia, and that Polynesia, the shores of Australia, and the continent of America, have contributed their share. To the philosopher who attempts to account for the geography of plants, the Hawaiian flora presents a problem difficult to solve. That the greater part of the vegetation, like the branch of the human family which inhabits the groupe, should originally have come from a *direction contrary to that of the trade-wind*, must ever excite speculation, and suggest the idea that in the distribution of organized beings Nature probably employed other means than merely those afforded by the currents of the atmosphere, the waves of the ocean, or the caprice of man.

A considerable portion of the vegetation, nearly one-third, consists of Ferns, those graceful forms which engage the attention of every observer. Of Palms only a single species, the Cocoa-nut, is found in Oahu, but two kinds of *Livistonia* in the other islands of this groupe; the rest of the flora is principally composed of Myrtles, Grasses, Sedges, *Mimoseæ*, and Arums. It is strange that there are so few plants peculiar to the groupe, and there is reason to suppose that when the surrounding countries have been thoroughly examined, the number will be still less.

But whatever may be the component parts of the Hawaiian flora, or from whatever quarters it may have been derived, it presents a great variety of useful plants. Some afford the choicest wood, equally adapted for ornamental furniture, and the construction of coarser architectural works; others yield spontaneously abundant harvests of delicious fruit, only waiting for hands to gather them; while again a considerable number bear tubers and corms, which contain a quantity of farinaceous substance, enabling the natives to prepare not only their own food, but also Arrow-root for exportation.

Some of the islands, especially Maui and Hawai, produce several species of beautiful fancy wood. In 1850 King Kamehameha III. presented to Her Britannic Majesty a circular table, solely composed of these. In its centre were inlaid the royal arms, well developed with the different woods, but the greater part of the table consisted of the Koa (*Acacia heterophylla*, Willd.), the light yellow tint and feathery appearance of which render it an elegant material for every kind of ornamental furniture, while its toughness and durability equally qualify it for the construction of the native canoes*. The Ohiaai (*Jambosa Malaccensis*, De Cand.) and the Kou (*Cordia subcordata*, Lam.) also have a wood used by cabinet-makers and carpenters. That of the Ohiaai was considered sacred in the time of paganism, and served for carving idols. The Oahu Sandal-wood (*Santalum paniculatum*, Hook. et Arn.), the Iliahi, or Laau-ala (fragrant wood) of the Hawaiians, is now to be found in only one place, called Kuaohe. Of the splendid groves, with the produce of which formerly so many ships were laden, but a few isolated bushes remain, and these would probably have disappeared had they not been protected by the law, and thus escaped being converted into fuel. The specimens now to be seen do not exceed three feet in height, and an inch in diameter; they are growing on the slopes of hills, close to the sea.

Numerous plants are used as articles of food. The root of the Ki (*Dracæna terminalis*, Linn.), which has a sweetish-bitter taste, is baked between heated stones, and eaten; formerly an intoxicating beverage was extracted from it. The stem of the plant, it may be added, is used for hedges, and the leaves for thatching, and wrapping up bundles of food, fish, charcoal, etc. The leaves serve also among the native women as a medium of communicating ideas, which appears to be somewhat similar to the Quipos of the ancient Peruvians; the leaves are rereduced to narrow shreds, and by making in them certain folds and knots the object is effected. The unexpanded fronds of the Kikawaiko, a fern, are considered a delicacy by the Hawaiians; but it must be confessed, that to a European they taste insipid, resembling in flavour more the white of a raw egg than any other substance. The fleshy trunks of the *Ape,* an *Aroidea,* with leaves measuring from eight to twelve feet in circumference, after having been roasted, and thus deprived of their acridity, are eaten. The fruit of the *Physalis pubescens,* Linn., is brought to Honolulu, where the white residents make it into tarts and pies, terming it native Gooseberry. The fruit of the Lahala (*Pandanus odoratissimus,* Linn.), the Ohiaai (*Jambosa Malaccensis,* DC.), the Ulei (*Osteomeles anthyllidifolia,* Lindl.), the Noni (*Morinda citrifolia,* Linn.), the Kilica (*Morus Indica,* L.), and many others, are eaten. The berry of the Kilica when ripe is black, but inferior in flavour to any of the Mulberries cultivated in Europe. This *Morus* has proved useful for silk plantations; its foliage is small, yet one taken from the fields at random, of eight months' growth, produced three pounds and a half of leaves, and within six weeks after being wholly stripped, it had so much recovered, that it could not be distinguished from those which had not been so treated. The Sandwich Islands Arrow-root is prepared from the *Pia* (*Tacca pinnatifida,* Linn.). The Pia grows spontaneously in dry sunny places, and is also cultivated to a considerable extent; it is about two feet high, and every part of it is extremely bitter. The fecula made from its tubers is equal to the best West India Arrow-root, and much used by the inhabitants for culinary preparations, starching linen, and various other purposes. It sells in Honolulu at about five cents a pound, and, according to official returns, 43,683 lbs. of it were exported in 1845; 10,000 lbs. in 1846. In the three following years the quantity sent to foreign countries was less; in 1850 it again increased. Still more important than the Pia, is the Kalo* (*Colocasia esculenta,* Schott), the favourite vegetable of the Hawaiians. It is chiefly grown in artificial swamps, but also, as in Central America, on dry ground. As is the case with all vegetables long cultivated by man, a great number of varieties exist, distinguished from each other by the colour of the corms and foliage, as well as by the height of the entire plant and the shape of the leaves; those varieties however in which a bluish colour prevails are considered the best, and the tribute to the chief has always to be discharged with them. Besides the Kalo, there are at present under cultivation Sugar-cane, Sweet Potatoes, Water Melons, Cucumbers, Potatoes, Bananas, Pumpkins, and Coffee. No pains are taken with the Breadfruit, as the natives, unlike those of the Society Islands, do not eat it. Cocoa-nut Palms are grown on the sea-side, but do not thrive well; they have evidently attained their northern limit. Under the old despotism, their fruits were reserved for the men, women not being allowed to partake of them; with the overthrow of the *tabu* system and the heathen superstitions, this custom, like many others, was discontinued, and Cocoa-nuts are now eaten by both sexes.

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* The statement of a recent traveller, that the canoes of the Hawaiians are made of the trunk of the Cocoa-nut Palm, is erroneous.

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* Spelt "Taro" by the early voyagers, though incorrectly, as there is neither *t* nor *r* in the Hawaiian alphabet.

Various vegetable substances are employed for miscellaneous purposes. The cloth (*kapa*) of which the natives make many of their dresses is obtained from the bark of two trees—the Wauke (*Broussonetia papyrifera*, Vent.) and the Mamaki (*Bœhmeria albida*, Hook. et Arn.). Formerly much cloth was made from the Kilica (*Morus Indica*, L.), but as its bark is of inferior quality, it is at present, when European manufacture may be had at a cheap rate, but little used. Cordage is obtained from the Hau (*Paritium tiliaceum*, St. Hil.), and two Sedges, Akaakai and Ahuawa. The two latter go through similar processes of preparation as the Flax. The vessels out of which the natives eat their *Poi*, *i.e.* fermented Kalo (*Colocasia esculenta*, Schott), is called *Ipu*, and consists of the shell of *Cucurbita maxima;* the network surrounding it is prepared from the bark of the Hau (*Paritium tiliaceum*, St. Hil.). The water-flasks, or *Huewai*, are sometimes handsomely ornamented, and are obtained from the Bottle Gourd (*Lagenaria vulgaris*). The kernels of the Kukui (*Aleurites triloba*, Forst.) are used for making oil, and are also employed instead of candles; a number of them strung upon a stick will burn for hours, giving a clear and steady light.

The Hawaiians display an intimate knowledge of the Vegetable Kingdom. They possess vernacular names for nearly every plant, and have almost invariably succeeded in discovering the uses to which the various herbs, shrubs, and trees may be applied. These they are always ready to communicate, with the exception of the medicinal properties. The knowledge of the latter is chiefly confined to the native physicians and the "wise women," who, deriving from it a lucrative return, observe a strict silence on these points, and, if questioned, give an evasive answer. Their sovereign remedy seems to be a decoction made from the root of the Awa (*Piper methysticum*, Forst.), a plant cultivated in different parts of the kingdom; but as formerly great quantities of intoxicating liquor were extracted from it, its cultivation is at present restricted by a law, according to which, in the whole Hawaiian dominions, only four fields, each not to exceed four acres in extent, are allowed to be planted with it.

Contributions to the Botany of WESTERN INDIA;

by N. A. DALZELL, ESQ., M.A.

(*Continued from p.* 295.)

Nat. Ord. SCITAMINEÆ.

ZINGIBER.

1. Z. *Nimmonii*, Dalz.; caule rubro-virescente glabro, foliis lanceolatis acuminatis basi in petiolum brevissimum angustatis supra læte viridibus subtus pallidis arachnoideis, spica adscendente ovata breve pedunculata verticem vix e solo exserente, bracteis lineari-oblongis vel lanceolatis acutis glabris rubro-striatis interioribus bifidis, corollæ laciniis exterioribus flavescenti-rubris, labelli trilobi flavi lobo intermedio ovato-rotundato vix emarginato, capsula ovi columbini magnitudine.

Crescit in utroque Concano, etiam in jugo Syhadrensi; fl. Julio.

Although it is a maxim among naturalists that differences of colour without difference of form cannot make a species, I find in making out the differential characters of this genus great help in recording colour as well as form, owing to the very great uniformity among the species, both as regards habit and structure, even of their minutest parts. The present species is by far the commonest of the three here described, and it is the only one of which I am at all in doubt as to its being an undescribed species, as it agrees well with the description of *Z. panduratum* of Roxb. Flor. Ind., which however was not found in the Indian peninsula. The species which I have now attempted to characterize is mentioned in Graham's catalogue of Bombay plants, under the name of *Alpinia Nimmonii*, but at that time the flowers were unknown, which is not much to be wondered at, as they appear (in common with those of the other species) at a time when the whole country is deluged with heavy and continued rains.

2. *Z. cernuum;* caule glabro læte viridi, foliis anguste ellipticis acuminatis *utrinque glabris*, spicis ovatis obtusis brevissime pedunculatis verticem vix e solo exserentibus, bracteis ovatis vel oblongis obtusiusculis luteo-virescentibus glabris interioribus breve trifidis, corollæ laciniis exterioribus *alutaceis*, labelli trilobi lobo intermedio ovato *profunde bifido* albo puniceoque lateralibus flavo puniceoque pictis.

Crescit ad Ram Ghât; fl. Julio.

This is the smallest of the three species here described. The apex of the leafy stem is always somewhat curved; beside this mark, it may be readily distinguished by its bright green stems, never having a tint of any other colour. The habit and form are entirely those of the preceding, but the colouring of the lip is the handsomest of any species I have seen. *Fruit* yellowish-white, smooth; *seeds* (unripe) red, striated, with membranous aril.

3. *Z. macrostachyum;* caule rubro pubescente, foliis lanceolatis acuminatis supra atro-virentibus subtus pallidis *pubescentibus*, spicis e radice solitariis vel geminis *cylindricis* elongatis longe pedunculatis, bracteis obovatis acutis rubiginosis, *corollæ albæ* labio 3-lobo, lobo intermedio rotundato emarginato lineis purpureis flabellatim picto, capsula obovata pubescente rubra bracteis breviore ovi fringillini magnitudine, seminibus atro-purpureis arillo longe fimbriato omnino tectis, spica florifera sesquipedali rubiginosa fructifera magis elongata læta rubra.

Crescit ad Ram Ghât; fl. Julio.

This species is well distinguished by its long stalked spikes, and also by its very dark green leaves. The root smells much more aromatic than those of the two former. This is also mentioned in Graham's Catalogue under No. 1455 as *Alpinia Mesana*, from the native name "*Meesum;*" neither had the flowers of this been observed at the time of publication.

Nat. Ord. VIOLARIEÆ.

Ionidium *hexaspermum*, Dalz.; semipedalis, caule simplici stricto pubescente, foliis linearibus basi apiceque angustatis glabris margine scabriusculis remote denticulatis, stipulis subulatis ciliatis, petalis lateralibus ovato-oblongis obtusis mucronatis, capsula hexasperma.

Folia 20–22 lin. longa, 2 lin. lata.—Crescit in collibus prope Belgaum; fl. et fr. Julio.

Very different from *I. suffruticosum* or *enneaspermum*, which are certainly one and the same species. The present plant has no branches, much longer and proportionally narrower leaves, and larger flowers of a *deep orange-red*, while in *I. suffruticosum* they are rose-coloured; but the best distinctions are in the number of seeds, and in the *form* of the lateral petals, which in *I. suffruticosum are acuminated from the middle*, while in the present species they are nearly as broad at the apex as at the base, blunt, and furnished with a mucro. This species stains paper yellow. As I gathered this on the borders of *Heyne's region*, and as it agrees remarkably well with the description of *Viola erecta*, Roth, Nov. Pl. Sp. (with the exception of "*flores exigui*," which is of no moment, as that depends on soil and other circumstances), I have little hesitation in believing this to be Heyne's plant, and that to give *Viola erecta* as a synonym for *I. enneaspermum* is an error.

Nat. Ord. COMMELYNEÆ.

Cyanotis *adscendens*, Dalz.; caulibus e radice tuberoso pluribus adscendentibus simplicibus basi ad nodum infimum radicantibus teretibus striatis nitentibus alternatim linea pilosa instructis, foliis lineari-ensiformibus acutis *glabris* carnosis recurvis basi vaginatis vagina brevi integra glabra vel pilosa, pedunculis axillaribus terminalibusque elongatis, axillaribus solitariis v. geminis, terminalibus ex folio supremo quinis umbellatis, capitulis involuto-spicatis multifloris (30 fl.) folio brevi suffultis, bracteis floralibus biserialibus imbricatis falcatis obtusis ciliatis.

Tubera cylindrico-oblonga. *Caulis* sesquipedalis. *Folia* 2–3 poll. longa, 2–2½ lin. lata. *Pedunculi* 1–3 poll. longi. *Calycis laciniæ* lineares, acutæ, dorso pilosæ. *Corolla* 3 lin. longa. *Filamenta* corolla duplo longiora; antheræ flavæ. *Ovarium* 3-lobatum, adpresse pilosum; semina in quoque loculo 2, *rugosa*, nitida.—Crescit circa Belgaum, in graminosis humidis frequens.

This species resembles *C. pilosa* (Rœm. et Schult.) in its inflorescence and its roots, but differs otherwise considerably, as there is no tuft of elongated radical leaves in this plant to approach it to *C. tuberosa* (Rœm. et Schult.) in the slightest degree, the longest leaf never exceeding three inches. The flowers are of a lovely blue, and come out in succession, and in great numbers, during the whole rainy season.

Nat. Ord. ACANTHACEÆ.

Asystasia *Lawiana*, Dalz.; caule herbaceo erecto quadrangulari nodoso trichotomo, foliis elliptico-oblongis acutis basi in petiolum pollicarem subito angustatis supra scabriusculis subtus nervis hispidis cum petiolo 4 poll. longis 2 poll. latis, spicis terminalibus solitariis brevibus, floribus approximatis oppositis sessilibus decussatis, bracteis bracteolisque lanceolatis acuminatis foliaceis trinerviis villosis illis corollam superantibus.

Bracteæ 9 lin., *bracteolæ* 5 lin. longæ. *Calycis laciniæ* subulatæ, glanduloso-puberulæ, 2 lin. longæ. *Corolla* parva, alba, bilabiata, 7–8 lin. longa, labio superiore 4-lobo, lobis obtusis æqualibus, inferiore integro, palato transverse rugoso, medio sulcato, ibique pilis introflexis lineato. *Capsula* immatura glandulosa, matura 8 lin. longa; semina, ut in genere, 4, fusca. *Filamenta* glabra, antherarum loculi basi callosi. *Stigma* brevissime bilobum.—Crescit prope Darwhar; fl. temp. pluviali.

A remarkable plant, discovered by my friend Mr. J. S. Law. Though it has the smallest flowers I have seen in the genus, yet the genus itself is here exhibited in its most highly-developed form, for in all known species, with the exception of *A. denticulata* (N. ab E.), the bracts on the other side of the rachis, opposite each flower, are sterile or empty, the flower being undeveloped; hence the generic character of "flores secundi," taken from a series of what I may be allowed to call unperfected forms, is not perhaps quite correct. In the present species each bract subtends a flower, and these bracts also are more highly developed than usual, as they are scarcely more than scales in the species previously known.

Nat. Ord. LEGUMINOSÆ.

Glycine *pentaphylla*, Dalz.; caule tereti volubili strigoso, foliolis bijugis cum impari lanceolatis mucronatis supra sparsim subtus crebre strigosis, floribus axillaribus interrupte spicatis, spicis strictis rigidis solitariis vel geminis folio brevioribus.

Folia 5 poll. longa, foliola prominulo-reticulata, *estipellata*, inferiora minora, impari maximo, 3 poll. longo, medio 1 poll. lato. *Flores* in rachi tereti strigosa gemini, subsessiles, minimi, crebri. *Bractea* minuta acuta sub quoque pedicello brevissimo, tertia inter pedicellos.

Calyx adpresse pilosus, basi bibracteolatus, subbilabiatus, dentibus omnibus brevibus acutis subæqualibus. *Vexillum* ovato-rotundatum, concavum, longiuscule unguiculatum, dorso adpresse pilosum. *Alæ* carinaque æquilongæ. *Stamina monodelpha*, antheræ omnes fertiles, alternæ breviores. *Ovarium* adpresse pilosum. *Stylus* brevissimus, incurvus. *Stigma* capitatum. *Legumen* (immaturum) valde compressum, lineare, acutum, mucrone brevi recto terminatum (valvis inter semina cohærentibus), pluriloculare, sesquipollicare, fere 4 lin. latum, suturis incrassatum.—Crescit in regno Warreensi; fl. tempore frigido.

I have given rather a detailed description of this newly-discovered plant, because it differs from the genus as defined, in Wight and Arnott's Prodromus, in having no uncinate mucro to the pod, no partial stipules, and *five* leaflets; but I think it will be admitted that it is a species of *Glycine*, notwithstanding the whole structure of the flower is entirely that of *G. labialis*, with the exception of the sterile anthers of the latter. The legume is broader than in any other *Glycine* I have seen, while the flowers are only 2½ lines long.

I beg to take advantage of the present opportunity to correct an error I committed with respect to a leguminous plant from Canara, described in the second volume of this Journal, under the name of *Pongamia Canarensis*. Having since been fortunate in obtaining the ripe legumes (then unknown), I find that the plant is a second species of *Brachypterum*, and has the legume *furnished with a short wing on both sides;* a third species of this genus is the *Dalbergia marginata* of Roxb. Flor. Ind., of which *Pongamia Heyneana* (Grah.), Wight and Arnott's Prodromus, p. 263, *is a synonym.* This last climber is pretty common in this part of India, and I have found it both above and below the Ghauts.

Nat. Ord. EUPHORBIACEÆ. Tribe BUXEÆ.

PROSORUS, *Dalz.* Genus novum.

Flores dioici. *Calyx* 4-partitus, laciniis æstivatione imbricatis, exterioribus minoribus. *Corolla* nulla. *Stamina* 4, in disci carnosi medio inserta, laciniis calycinis opposita; *antheris* extrorsis. *Ovarii* rudimentum nullum. FŒM. *Calyx* ut in fl. masc. *Ovarium* disco carnoso insidens, 3-loculare, loculis biovulatis. *Stylus* nullus. *Stigmata* 3, longiuscula, plana, reflexa, apice bifida. *Fructus* capsularis, tricoccus, *coccis* bivalvibus dispermis. *Semina* nitida, purpureo-cærulea, testa ossea.—*Arbor in jugo* Syhadrensi *crescens*, foliis *breve petiolatis, stipulatis, ovalibus vel oblongis, breve acuminatis, glabris, penninerviis, integerrimis*, stipulis *parvis, acuminatis, deciduis*, floribus *in ramulis junioribus, infra folia juniora fasciculatis*, masculis *numerosissimis*, pedicellis 3–4 *lin. longis, basi articulatis*, bracteolis *minutis, obtusiusculis, suffultis ;* fl. fœmineis *ternis, pedicellis longioribus.* Prosorus *Indica*, Dalz.

Both male and female specimens of this plant have long lain in my herbarium unnamed, the former as a tree of which the female had not been found, and the latter *vice versâ*, it having never till very lately occurred to me that there was any relationship between them. The male flowers, which are minute, appear along with the young leaves in March, and the ripe fruit is found in the rains. The genus comes very near to *Flüggea*, from which it differs in the quaternary division of the perianth, the fewer stamina, the absence (in the male flowers) of nectarial glands and rudimentary ovary, notwithstanding the habit is entirely that of *Flüggea*. Perhaps this is the plant alluded to by Dr. Wight in his note on *Flüggea leucopyrus*, Ic. 1875, where he says, "On the eastern slopes of the Neilgherries a very distinct form occurs in great abundance, flowering during the earlier months of the year, and much more luxuriant than any I have seen on the plains. *It is perhaps a distinct species*, a point which I regret to say I have never determined by careful comparison." Gen. name from *προσορος, affinis.*

Nat. Ord. CRASSULACEÆ.

Kalanchoe *Ritchieana*, Dalz.; sesquipedalis, herbacea, glauca, caule simplici erecto tetragono succulento, foliis oblongis basin versus angustatis *perfoliatis* decussatis crassis carnosis concavis margine obscure dentatis inferioribus approximatis glabris superioribus viscoso-glandulosis minoribus, inflorescentia terminali racemoso-paniculata viscoso-glandulosa.

Crescit in colle "Caktay" dicto, inter Belgaum et Sholapore. Legit *Dr. Ritchie*, cui rite dicata.

Folia 6 poll. longa, 2½ poll. lata. *Calyx inflatus, vix ad medium quadrifidus*, glanduloso-viscidus, 3½ lin. longus. *Corolla* calyce subduplo longior, basi ventricosa, medio constricto, apice 4-fido, laciniis oblongis apice semicucullatis et mucrone longiusculo incurvo terminatis. *Stamina* 8, quorum 4 in medio tubo, 4 iis alterna, in fauce; glandulæ hypogynæ *longæ, lineares, acutæ*, capsulis dimidio breviores. *Flores* distantes, alterni, brevissime pedicellati, bracteola subulata suffulti.

An examination of this remarkable plant more than proves the truth of De Candolle's observation, as contained in his memoir on this family, "Qu'il eût été peut-être plus conforme aux affinités de réunir *Bryophyllum* comme section de *Kalanchoe*," for we have here the inflated and tubular calyx of the former, with *all the other* parts peculiar to the latter genus. It is evident therefore that the two must form but one genus, and *Bryophyllum*, the later name, be expunged.

BOTANICAL INFORMATION.

Rice-Paper of China.

We had flattered ourselves that the question respecting the origin of the Chinese Rice-paper had been set at rest by the results of our inquiries as related in the pages of this Journal, namely, that it was the product of a plant peculiar to the island of Formosa, to which we believed we had sufficient materials for assigning the name of *Aralia? papyrifera*. (See our figure and description, p. 50, Tab. I., II., of the present volume.) Other plants, it is true, had been suggested; but either the medullary substance proved, on investigation, like the "*Shola*," not to confirm the opinion, or there was no opportunity of coming to a knowledge of the nature of the plant suspected. Our own reasons for believing the *Aralia?* to be *the* plant are before the public, and they have, in our minds, been substantiated by subsequent inquiries, particularly by those instituted by the Messrs. Bowring, father and son, at Hong-Kong. These gentlemen have been indefatigable in their researches. They have procured for us specimens of the stem, of the pith, numerous packets of the paper as prepared for commerce, etc. etc.; and now at length we have the high gratification of saying, that out of four separate cases sent by the Overland Mail, on two different occasions, two living plants arrived in a healthy state at the Royal

Gardens of Kew*. The results of all the well-directed efforts† to ascertain the true plant, commencing with those of John Reeves, Esq., some thirty years ago, to the present time, point to one and the same plant, viz. our *Aralia? papyrifera.*

A number however of the 'Journal of the Agricultural and Horticultural Society of India' (Part 2 of vol. viii.) has just been most kindly communicated to us by Dr. Falconer, which contains a memoir "On the Plant yielding the *Rice-Paper* of China, by W. T. Lewis, Esq."

"I have frequently," says Mr. Lewis, "remarked the similarity to Rice-paper of a substance in common use among the Malays and Siamese in making their artificial flowers, and on examination am convinced that I am right in conjecturing that it is the same. I have therefore procured some of the plant, which is very abundant on all the sea-coasts of the Malayan Archipelago, and find it to be the *Scævola Taccada* of Roxburgh."—"Only one or two Chinese of this place (Penang) have been able to give me any certain information of the paper, and from their accounts I am enabled to afford a pretty satisfactory description of the process of preparing the pith for use." He then proceeds to say, "It is not plentiful on the coast of China, but is imported from the island of Formosa in pieces four to six feet in length. The outer parts (bark and wood, greatly resembling the Elder plant) are taken off, when a sharp instrument, from ten to twelve inches long and about four inches broad, is employed for slicing the pith carefully—and by an experienced hand, as this is requisite—and then flattened out."

The above is very nearly the whole of Mr. Lewis's communication; and from this, although that gentleman is aware that the stems are imported from Formosa, it does not appear that he has ever examined or compared the *stems* and the *foliage* of the two: but rather that he has formed his opinion on a comparison of the *piths* exclusively.

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* One of these, at the request of Dr. Bowring, has been presented to his Grace the Duke of Devonshire.

† We are here happy to have the opportunity of noticing the exertions of George Bennett, Esq., author of the 'Wanderings in New South Wales, Singapore, and China.' While correcting the present sheet for the press I have the pleasure to receive a letter from Mr. Bennett, dated Sydney, June 28, 1852, referring me to p. 77, vol. ii., of the above work, where he has related the assistance he received in 1834 from J. Beale, Esq., of Macao, in endeavouring to ascertain the plant yielding the Rice-paper. He there gives a woodcut of a drawing procured, professing to be the plant, which the late Mr. Lambert and Mr. David Don considered was probably a species of *Aralia.*

The statement of Mr. Lewis is then followed by an interesting narration, from the pen of Dr. Falconer, of all that had been done towards a true knowledge of the Rice-paper plant to the date of that communication in Calcutta, viz. July, 1852. He testifies to the exact resemblance in colour and texture of the pith of the "*Taccada*" with the Rice-paper; but observes that the largest "*Taccada*" pith sent by Mr. Lewis is only $\frac{7}{10}$ of an inch in diameter. He further remarks that the *Scævola Taccada* and its applications were most fully described, before 1690, by Rumphius, who it is clear too considers the "*Taccada*" (his *Buglossum littoreum*, or *Moral* of Amboyna) to be the same as the Rice-paper of the Chinese; for he says, "In China it (the *Taccada*) is called *Tscho*, although it does not grow in China Proper, but on the northern coast of Formosa, near Kelang," the locality of our Araliaceous plant; "but the Chinese kind shows much wood, *and yields but very little pith*." From the latter expression, at variance with what Dr. Falconer considers the fact, as well as from the great difficulty there must have been at the time of Rumphius in procuring the Formosa plant, I should infer that Rumphius (and Mr. Lewis too) draws his conclusions of the identity of the "*Taccada*" of the Malay Archipelago with the Rice-paper plant of Formosa, from the similarity of the pith, and of the uses made of it by the Malays and by the Chinese, in the same way and for the same reason as the *Shola* of India (*Æschynomene paludosa*) was long considered to be indentical with Rice-paper. It may be, as Dr. Falconer thinks probable, that Formosa produces two pith-yielding plants; the one being the "*Taccada*," as stated by Rumphius, the other the Rice-paper (*Araliaceous*) plant; but we have no evidence of this whatever.

Thus much we know, that within the tropics, in the Malay Archipelago, the beautiful but comparatively slender* pith of the "*Taccada*" (*Scævola Taccada*) is much employed in making artificial flowers, etc., by the natives, and that the Chinese employ the stout pith of a plant, similar in texture, (so much so, that Dr. Falconer, who has examined the two microscopically, pronounces them "nearly undistinguishable,") from an extra-tropical region, viz. the northern part of the island of Formosa, for like purposes and for making paper. This latter we have, we think, stronger evidence for considering to be an Araliaceous plant, for we possess perfect dried stems, the dried foliage, the pith in various stages of preparation, and now the living plant. We are nevertheless grateful to Mr. Lewis for having, as Dr. Falconer says, "awakened attention to a material of the Malay Islands which has been long overlooked, and which is, assuredly, not inferior in texture to that of the far-famed Rice-paper." We trust that our Kew Museum of vegetable products may, through the kindness of our friends in India, soon possess as extensive and illustrative a collection of the "*Taccada*" pith as it does of the Rice-paper. The living plant, the *Scævola*, we have long possessed in the garden, from our great oriental contributor Dr. Wallich, and from the late Mr. Allan Cunningham, who introduced it from the northern shores of New Holland. From the observations of De Vriese, in his Memoir on the *Goodenovieæ*, there is reason to believe that *Scævola Taccada* of Roxburgh is not specifically distinct from *S. Königii*, Vahl.

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* The largest pith of "*Taccada*" known to Dr. Falconer, as above stated, is seven-tenths of an inch in diameter (and he confirms the statement of Rumphius, that the older and thicker the stem the more slender the pith), while that of the Chinese Rice-paper is 2¼ inches in diameter.

We shall conclude our present notice of the Rice-paper by an extract from the recent letters of J. O. Bowring, Esq., Hong-Kong, which accompanied the rooted plants.

"Mr. Sullivan," he says, "H.M. Consul at Amoy, is at present in Hong-Kong, staying with my father, but he is, I am sorry to say, in so weak a state that I have hitherto been unable to obtain any information of value regarding the plant, and I much doubt if he can really furnish any. The Chinese at Amoy tell the most extraordinary stories of the way in which the plant is procured; yet Mr. Sullivan seems to think that this arises quite as much from ignorance as from a desire to deceive. The leaf of the plant resembles the dead one I saw last year. I send you the living plants in their original Chinese jars, as they are growing so well therein that I do not like to remove them; and I have had a couple of Ward's cases made, in which I hope they will travel safely.

"I have also obtained from Mr. Sullivan a quantity of the Rice-paper made up in packets, as it is exposed for sale at Amoy, a number of specimens of the pith, some of which is a foot long, and some artificial flowers made from this curious substance. A bundle of the Rice-paper contains, or should contain, one hundred sheets, and sells for 35 'cash' (five farthings, or thereabouts) each bundle, so that it is evident that the plant is produced in great profusion in the places of its growth.

Mr. John Smith, who proceeds to England by this mail, has kindly taken charge of a packet containing eight hundred sheets of the Rice-paper, in the state in which it is exposed for sale, which he will deliver to you, and he will also give an eye occasionally to the living plants." [The bundles of paper are safely deposited in our museum, but the growing plants above mentioned were received quite dead.]

"Since I last wrote," observes Mr. Bowring in a subsequent letter, "I have received from Amoy an enormous supply of the pith, some of the best pieces of which I will send you with the artificial flowers. The instruments* which are said to be employed in preparing the paper have also reached me, but they are such common, rough-looking articles that I suspect them to be merely those used in cutting down the plants in the woods. As I find that none of the tea-ships are likely to touch here at present, on their way from Whampoa, I have made up my mind to send two more of the plants overland, and I now enclose the bill of lading for the two cases. We have just heard from Fuhchow that nothing has been yet gleaned there respecting the plant. The chief mandarin of that place had, on learning that my father had desired inquiries to be made on the subject, despatched a messenger to Formosa to obtain live plants and gather information; but it is feared that the junk in which he embarked has met with some accident, as nothing has been heard of it."

MR. CHARLES WRIGHT'S *Plants of New Mexico.*

Our friends will be interested in knowing that Mr. Charles Wright has continued to prosecute his botanical researches in New Mexico with eminent success, extending his journeys to the borders of Mexico Proper. The first part of the sets collected in 1851 and 1852 are now ready for distribution. It extends to *Compositæ* inclusive, and Dr. Asa Gray has already commenced printing the memoir, in which they will be named or described according to the numbers attached to them. Scarcely ever, writes Dr. Asa Gray, have I received any collections that contained so much of novelty.

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* The instrument here alluded to, two of which are deposited in the Rice-paper collection of the Kew Museum, is like a small hatchet, or an implement used by the peasantry for heading and tailing turnips, rather than one required for cutting the cylinder of pith into the delicate sheets of paper; yet our drawing, represented at Vol. II. Tab. IX. of this Journal, shows such to be the use made of it, if their drawings and the accompanying descriptions can be depended upon. In those drawings, however, let it be observed that the size of the pith is monstrously exaggerated.

We are thankful to learn that so able and experienced a collector is about to embark on another botanisal mission, either for the Sandwich Islands and the coast of Oregon, or he is, what we earnestly hope will be accomplished, to accompany the United States Japan Expedition.

NOTICES OF BOOKS.

BONPLANDIA, *a new Hanoverian Botanical Journal; conducted by* Berthold Seemann *(in London); published by* Carl Rümpler *(in Hanover).*

This journal is intended, according to the prospectus at the commencement of the first number, to be devoted to the practical applications of Botany, and the articles will, on that account, be made as popular and amusing as possible, so that purely scientific researches, which cannot be considered of interest to the general reader, will find no place in it. It is proposed to give all the newest botanical discoveries which have reference to medicine, pharmacy, horticulture, agriculture, and, in fact, all branches of practical science, as well as accounts of botanical journeys, papers on the geography of plants, and occasional biographical notices; but all controversial matter will be carefully avoided.

The first number contains an interesting article on the adulteration of Tea; an abstract of Dr. Royle's essay on the Soma plant; some remarks on poisonous *Cichoraceæ*, by Dr. Schultz (Bipontinus); a biographical notice of Edmonston, the botanical traveller; some reviews of books, and numerous pieces of intelligence on botanical subjects. The work is to appear in fortnightly numbers, each of which will contain eight long-quarto (or small folio) pages, and the price is fixed at 3⅓ Prussian dollars per annum. It is announced that contributions, which may be written in any European language, but will appear in German only, may be sent either to the editor, Mr. Seemann, at Kew, or to the publisher, Mr. Rümpler, in Hanover.

ALPHABETICAL INDEX

TO THE CONTENTS OF THE FOURTH VOLUME OF

HOOKER'S JOURNAL OF BOTANY.

Algeria, Plants of, 317.

Babington, Rev. C.: Lichenes Himalayenses, 243.
———— Notice of Lichens collected by Dr. Sutherland, 276.
Balfour's Class-book of Botany, 158.
Begonia phyllomaniaca, 206.
Bennett and Brown: Plantæ Javanicæ Rariores, 254.
Bentham, G.: Florula Hongkongensis, 41, 73, 116, 164, 193, 232, 296, 327.
———— Second Report on Mr. Spruce's Collections of Dried Plants from North Brazil, 8.
Berkeley, Rev. M. J.: Decades of Fungi, 97, 130.
———————— Enumeration of a Collection of Fungi from Borneo, 161.
Bertoloni: Illustrazioni di Piante Mozambigesi, 95.
———— Miscellanea Botanica, 94.
Blanco, Dr. A., 124.
Bolle, Dr. C.: Notes on the Botany of the Cape de Verd Islands, 59.
Bombay, Botany and Government Gardens of, by Dr. J. E. Stocks, 314.
Bourgeau's Spanish Plants, 124.

Camphor of Borneo, Chemical Composition of Crystals of, 285.
Camphor-tree of Sumatra, by Dr. De Vriese, 33, 68.

Dalzell, N. A. Esq.: Contributions to the Botany of Western India, 107, 289, 341.
De Candolle, Bust of, 223.
———— Prodromus, Vol. XIII., 192.
De Vriese, Dr. W. H.: Descriptions et Figures des Plantes du Jardin Botanique de l'Université de Leide, 255.
———————— On the Camphor-tree of Sumatra, 33, 68.
Denham, Captain, Voyage of, 155.
Deparia, Notice of a New Species of, 54.
Douglas, David, Tribute to, 26.
Drummond, Mr. James, Extract of a Letter from, 188.
———————— Plants of Western Australia, 125.

Epimeliæ Botanicæ, by C. B. Presl, 286.

Gardiner, Mr. William, of Dundee, 155.
Gardner, George, Esq., Herbarium of the late, 30.
Glastonbury Thorn, Superstitions with regard to, 126.
Gray, Dr. Asa: Note on *Tetratheca*, 199.
———————— South-west Australian *Compositæ*, 225, 266.
———————— Plantæ Wrightianæ Texano-Neo-Mexicanæ, 287.
Griffith's Palms of British East India, 93.
Grisebach's Bericht über die Leistungen in der geographischen und systematischen Botanik, 32.
Gynerium saccharoides, 313.

Harvey's Nereis Boreali-Americana, 126.
Herald, Botany of the Voyage of the, Part I. 156.
Hooker, Sir W. J.: Camphor-tree of Borneo and Sumatra (*Dryobalanops Camphora*), 200.
———————— Chinese Rice-paper, 50.
———————— New species of *Dammara*, 115.
Hooker, Dr. J. D.: Flora of New Zealand, 160, 189.
———————— Description of a New Species of *Amomum*, 129.

Jaubert et Spach: Illustrationes Plantarum Orientalium, 128.

Lanzius-Beninga, S., Beiträge zur Kenntniss des inneren Baues der Mooskapsel, 31.

Liebmann, Prof. F.: The Oak-vegetation of America, 321.
Linnæan Herbarium, The, 217, 252.

Marshall, W., Esq.: Account of the Water-weed, *Anacharis Alsinastrum*, 320.
Martius, Prof. C. F. P.: Eloge on Professor Ledebour, 65.
Meisner, Prof. C. F.: *Proteaceæ* collected in South-western Australia by Mr. Drummond, 181, 207.
Moore, Thomas: Popular History of British Ferns, 63.
Mozambique: Bertoloni, Illustrazioni di Piante Mozambigesi, 95.

Natal, Plants of, 222.
Nees von Esenbeck, Sale of his Library and Herbarium, 28.

Olympus, Plants of, 31.

Paper of *Daphne Laureola* (Spurge Laurel), 312.
Parlatore, Professor, Letter from, to Mr. P. B. Webb, 56.
Plant, R. W.: Notice of an Excursion in the Zulu Country, 257.
Pritzel, G. A.: Thesaurus Literaturæ Botanicæ omnium Gentium, 319.

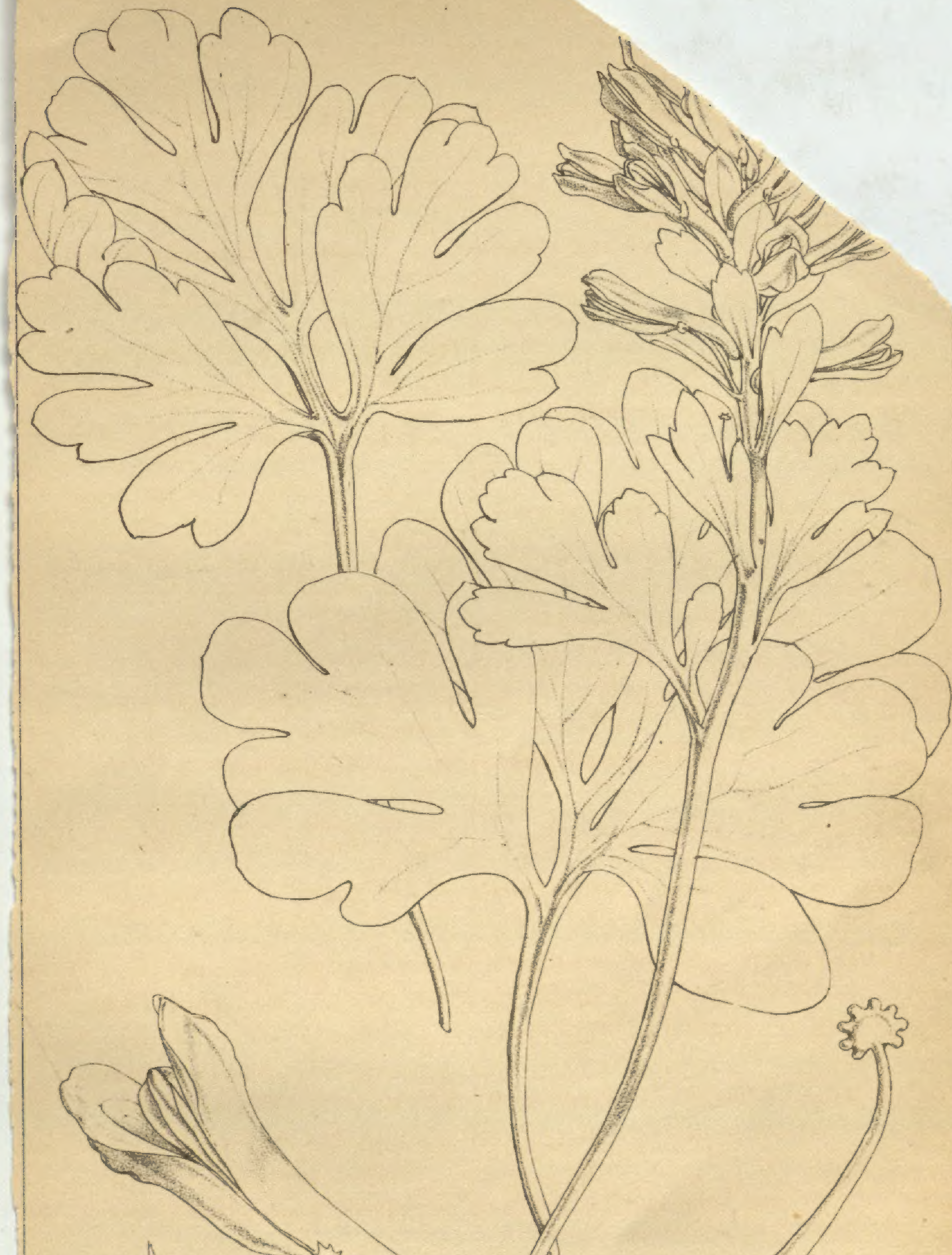
Rice-Paper of China, 347.

Schouw, Professor, Death of, 156.
Seemann, Berthold: Journal of the Voyage of H.M.S. Herald, 18, 82, 212, 238.
Seemann, Berthold: Notes on the Sandwich Islands, 335.
——— Note on the Spines of Cactuses, 123.
——— Botany of the Voyage of the Herald, 156.
——— Bonplandia, a New Botanical Journal, 352.
——— Die in Europa eingeführten Acacien, 64.
Spruce, Mr., Letter from, to George Bentham, Esq., 278, 305.
——— Letter from, to Mr. John Smith, 282.
Stocks, Dr. J. E.: Notes on Beloochistan Plants, 142, 172.
——— Notes on the Botany and the Government Gardens of Bombay, 314.

Tallow Tree and Insect Wax of China, 150.
Temperature, Increase of, in the flowers of *Victoria regia*, 62.
Thwaites, G. H. W., Esq.: On two new plants, *Epicarpurus Zeylanica* and *Doona Zeylanica*, found in Ceylon, 1.
Tulasne, L. R.: Monographia Podostemacearum, 256.

Vancouver's Island, 220.

Watson's Cybele Britannica, Vol. III., 223.
Wight's Icones Plantarum Indiæ Orientalis, 190.
——— Illustrations of Indian Botany, 192.
Wright's, Charles, Plants of New Mexico, 351.



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Vol. IV. Pl. XI.

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2
3
4
5
6
7
8
9
10

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